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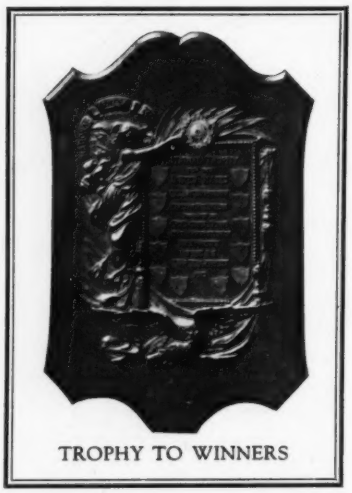

TROPHY TO WINNERS

The Remington Arms Club

WINS

Civilian Team Championship

Seldom, if ever, does a rifle club team win a championship contest twice in succession, but that is exactly what has happened to the Remington Arms Club Rifle Team.

The National Rifle Association has just officially announced the results of the Civilian Interclub Championship for 1924, which the Remington Arms Club Team wins by one point over the nearest team with a total score of 2916 out of a possible 3000. Their score in winning this championship last year was 2913. The difference of only three points between last year's score and this year's total indicates a very uniform performance and establishes rather conclusively that the winning team is justly entitled to the title of Interclub Champions. All of the team members used Remington rifles and Remington Palma cartridges.

There could be no more convincing demonstration of the superior accuracy and uniform excellence of the Remington Palma .22 long rifle cartridge.

The official detailed scores follow:

Name	1st week Pr.	Sit.	2nd week Pr.	Knee.	3rd week Pr.	Sta.	Total
Harold J. Wood	100	100	99	98	100	96	593
Allan C. Russell	98	98	100	99	100	97	592
Frederick O. Kuhn	99	100	100	99	100	94	592
C. S. Neary	98	99	100	93	100	84	574
D. B. Olson	98	92	100	86	99	90	565
Aggregate - - - - - -							2916

THE REMINGTON ARMS CLUB RIFLE TEAM
N.R.A. CIVILIAN INTERCLUB CHAMPIONS 1924

Sitting: H. J. Wood, Captain; Lieut. C. N. Hungerford, Conn., Judge
Standing: A. C. Russell, C. S. Neary, D. B. Olson, Fred Kuhn

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REMINGTON PALMA

The Premier .22 Long Rifle Cartridge

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The AMERICAN RIFLEMAN

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Getting a Kick Out of Hunting

By Capt. Charles Askins

CAPT. PAUL CURTIS spoke words of wisdom the other day when he said, "The man who is so cool that he never fails to put his bullet in the right place cannot get enough kick out of big game shooting to make it interesting."

That was a new way of looking at things to me, but I believe that the Captain struck on a fundamental truth. Perfect coolness must necessarily be accompanied by a certain amount of indifference. I have seen two classes of men who were quite cool in the presence or sight of big game. One was the sort of man who is not a hunter, and you couldn't make a hunter out of him. A deer and a cow looked just the same to him. The other class was practically professional hunters. I have seen two or three big game hunters with experience in African shooting who would fire at a deer with as much indifference as I would shoot at a pig in a pen. Did they get any pleasure out of deer shooting? They said not and I believed them.

I remember once, a long time ago, maybe thirty-five years ago, meeting a man in Mississippi whom they called Captain Short, a professional dog trainer and a crack quail shot. Some friends, so the story goes, insisted upon the Captain going deer shooting with them. He, it seems, had never shot a deer. They took him into Yazoo bottoms, put him on a good stand and drove deer to him. Five deer came past at short range, single file, and he killed them all one after another with a Winchester .45 rifle. Thereafter he totally foreswore deer shooting; said there was no sport about it, no shooting skill required, no excitement any more than shooting so many heifer calves. He couldn't get any kick out of it whatsoever.

Now if the Captain could only have had buck ague and have missed all those deer, I dare swear he'd have become a confirmed deer hunter. That brings us to the point. All these years we have tended to laugh at the man who got buck ague, and the man who had it was inclined to make stout denial, or possibly admitted that he once used to have it, but was now entirely cured. All dead wrong. The only man who really enjoys deer shooting is the chap who either has buck ague or who has to hold himself in severe check to keep from getting it. The minute he outgrows this feeling he loses the kick, "stuff is off." He must go to other and perhaps more dangerous game in order to try to get back just a little of the buck ague he has labored so hard to get rid of.

I was out quail shooting not long ago. My companion and I rode up within fifty yards of a fine buck deer, standing, looking at us, head turned back over his shoulder. He looked four feet high, with rounded barrel and great square buttocks. I remember thinking that I could have shot off one horn or cut his tail in two. Both of us carried shotguns so there was no eagerness to shoot. I glanced at my companion. His eyes were fairly glaring and a red flush had come to his face as he sat tense in the saddle with his hands clenched. I envied him the thrill he was getting from the sight of that deer. Maybe I could feel like that, were it a moose or a bear, but probably my time of greatest pleasure in big game shooting is gone. If I could only have buck ague again, that would turn back the hands of the clock.

I remember well the first quail that I ever killed on the wing; remember the dog, a heavy-built spotted fellow, only half bird dog, who would sometimes point birds, but would never hold them longer than he liked. I was going down a branch filled with uprooted stumps, much liked by rabbits. On one side was a cornfield, with the cattle pasturing down the standing stalks. Ranger went up the field and I saw him come to a stand; a moment later he flushed and here came the birds, taking refuge as usual in the tall grass along the branch. Most of them dropped in but one bold cock, more ambitious than the others, continued to fly and was coming on past me. I had been reading Frank Forester, and knew that the way to shoot quail was to be cool and not cock the gun until the birds were on the wing, then raise the left hammer, shift and raise the right, and then shoot, having become properly cool and collected during the interval of cocking the gun. I obeyed directions, cocked the left barrel, cocked the right, and stood waiting. Spare, brushy trees grew on either side of the ravine, but there was an opening through which the quail would have to pass. He burst into the opening, traveling at lightning speed it seemed to me. It so happened that I had my little muzzle loader pointed at about the right elevation and as he attempted to pass in front of it the trigger was pulled. Down went the quail, the fine feathers floating and drifting down. I searched long for the bird, tramping down the grass in a spot as large as a room. At last, finding I

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Mass, Weight and Muzzle Energy

By W. S. Davenport

IN considering the kinetic energy of moving bodies, we have to deal with energies derived from forces other than gravity and in which gravity plays no part; and since weight is a product of mass and gravity therefore weight as a whole also plays no part, but only the mass part of weight. This is confusing to those of us who are not engineers or other mathematical scientists. This weight is present because gravity is, and we have to express mass in units of weight quite awkwardly as the fraction W divided by g, which simply means that from weight, which is a product of mass and gravity, we withdraw gravity leaving mass. This mass we regard as a constant quantity wherever it is and whatever its motion, if we leave Einstein out of this talk. A certain mass of brass used as a clock weight weighs six pounds on the earth, but on the moon it weighs one pound. It is the same amount of brass, the smaller weight comes from the smaller gravity, and the fraction W/g has the same value on the moon as on the earth. On the moon the brass weight will behave in the same way as on the earth in those phenomena in which gravity plays no part, but where it does, the weight will have a value one-sixth of that on the earth. In the clock, for instance, it will not turn the wheels as well, but hurled along the ice of a skating rink it will hit the wall the same blow in foot pounds, because gravity has not set it into motion and cannot affect its energy in this direction at right angles to the force of gravity. Therefore the mass part of weight, not the whole of it, is a factor of its kinetic energy.

A one-pound lead ball dropping 1000 feet hits the ground with a kinetic energy that is very simply expressed as a force of one pound acting through a distance of 1000 feet and hitting a blow of 1000 foot pounds. In this both gravity and weight play a part, but at the instant the ball is about to hit the ground gravity is done with it, it is not going to drop further and the acceleration of gravity is left as speed. Therefore the gravity part of weight may also be disregarded leaving only the mass part, and we can express the kinetic energy of that blow of 1000 foot pounds in terms of mass and speed. But if we can do this it makes no difference whether we drop the ball from a height on the moon as to give it this speed or whether we fire it from a gun at that speed on the earth or on the moon or off in space where it weighs nothing at all when it hit the target. Given that mass and speed its kinetic energy is 1000 foot pounds.

Therefore as the ball is about to hit the ground we can express its kinetic energy either as a force of one pound that has acted through 1000 feet, or in some terms of its mass and speed, and these terms we can derive from the laws of falling bodies. The acceleration of gravity is about 32 feet per second and at the end of t seconds the velocity, v, is equal to g times t. Hence t is equal to v divided by g. Knowing any two of the three we can determine the third. The ball starts from rest and reaches a final velocity v, and since the acceleration is uniform, the average speed is one half v. The distance it drops is the average speed times the seconds it falls, or one-half v times t. Since t equals v divided by g, we may express this distance as one-half v times v divided by g, which is one-half v *square* divided by g. In the simple equation for the kinetic energy weight times distance, we can now put this value for distance and we have for the kinetic energy weight times one-half v *square* divided by g, which is the usual equation for calculating muzzle energy. We have taken a dropping ball to determine this expression of kinetic energy in terms of mass and speed because the force is constant throughout the drop, while in a gun the force is not constant and would complicate matters. In this equation the fraction W/g occurs, for which we may put mass, getting one-half the mass times the square of the velocity, which is wholly free from gravity and the gravity part of weight. Uusually we leave W/g because we need these units to express mass. They offset each other and the fraction has the same value everywhere for a given mass.

A force is a factor of energy that becomes energy when it acts through a distance or space. In a rifle the force comes from the gasses under pressure, but this pressure does no work unless the force acts through a distance. This distance is the length of the barrel in the case of the muzzle energy. But these gases are not like gravity, they press in all directions. On the walls of the barrel they act through no distance and generate no energy, on the breech the force acts through a very short distance while the bullet is moving out of the barrel, because the mass of the rifle is greater than that of the bullet and the rifle moves back slowly. What happens is just what we should expect. If the rifle is 200 times as heavy as the bullet, its speed is one-two-hundreth of the bullet's speed. But this does not leave their energies equal, for increasing the bullet's weight 200 times increases its kinetic energy the same, but reducing its speed to one-two-hundredth reduces the energy 200 times 200, so on the whole the kinetic energy of the gun is one-two-hundredth of that of the bullet. We have a single force acting in two directions, two hundred times as far in the one as the other direction. The case is not the same as when we compare a 200-pound weight dropping one foot and generating as much energy as a one-pound weight dropping 200 feet, for the forces are not the same, the one force is 200 times the other. The single force in the rifle imparts a kinetic energy or recoil to the rifle that is only 1/200 of the muzzle energy.

We can express the kinetic energy of the bullet either as a force acting through a distance or in terms of mass and speed. In designing a new cartridge it is useful to be able to express this force and distance, and it is more difficult to do this because the force is not constant throughout the passage of the bullet along the barrel. It is done graphically with vertical lines for the pressures and horizontal for the distances of the bullet, the product of the two being an area the size of which expressed the amount of energy, in this case volume energy, given to the bullet as kinetic energy. It is an indicator card like that used in engines.

In calculating muzzle energy there are several short cuts that save some figuring. The kinetic energy of a missile is expressed in foot pounds by one-half the weight in pounds times the square of the velocity in foot seconds, divided by the acceleration of gravity which we may take as 32.174 foot seconds. If the bullet's weight is expressed in grains, we must divide it by 7000, the number of grains in the pound. Our energy is a fraction with the weight and square of the speed in the numerator and three constant numbers in the denominator, 2 times 32.174 times 7000. We may save figuring by uniting these three to one, which is 450436. To divide by this long number is laborious and it will be close enough to use 450,000. Or we may divide one by 450,436 and multiply the numerator by the result, which is 0.000002220. The muzzle energy is then expressed as speed times speed times weight times 0.00000222.

When we get the result, we shall always know where to point off, for the nature of the load will tell us whether it is 247.6 foot pounds or 2476. Therefore we may disregard decimal points and ciphers at the beginning and end of a number, which saves a lot of figuring. For instance we have a 200-grain bullet at 2000 f. s. Multiplying 2 by 2 and this again by 2 makes 8, and 8 times 222 are 1776, a result we can write down with no figuring on paper at all.

Multiplying the speed by itself usually gives a long row of figures of which all but the first four are superfluous. These we multiply by the weight in grains and take the first four figures of the product to multiply by 222, which saves figuring.

If a number ending in 5 is to be squared, there is a short cut to do it. If 65 is to be squared, add one to 6 making 7, then 6 times 7 are 42, and adding on 25 we get 4225. If the speed is 1950 f. s. which is the same for us as 195, we add one to 19 getting 20, multiply 19 by 20, which we do in our head, getting 380 and adding on 25 we get 38025. If the bullet weighs 50 grains at 1950 f. s. we should multiply 38025 times 5 times 222 to get the muzzle energy. But multiplying 222 by 5 is the same as dividing it by 2 for us who are disregarding decimals, and that is 111, so we get 38025 times 111 equals 4220775, which we round off as 422 foot pounds. Now if we cut out all but 38 from the 38025, we have

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An Analysis of Game Bullets

By Townsend Whelen

Part V

.350 and .400 Bullets on Big Game

LEARNING that Dr. A. P. Chesterfield, a very experienced big game hunter, had just returned from Africa, where he had used a .400 Whelen rifle, I wrote to him relative to its effect on the big game of that continent. He replied with a very flattering account of the performance of the rifle and its cartridge, and has sent me an article on its work in Africa which is appended hereto. Doctor Chesterfield, after he had such excellent results with the rifle, submitted it to inspection by a number of prominent hunters in Africa, but he states that the only men whose comments on the rifle he paid any attention to were Leslie Tarleton, Leslie Simson, William Judd, Allan Black, Percival, Pat Ayre, and Shaw, of Shaw and Hunter. These men everyone knows as the most experienced hunters in Africa, and their opinion is really valuable. They were all of the opinion that the rifle was most excellent in every way, but they were also unanimous in the opinion that the bullet should be slightly longer, slightly pointed, and a little heavier. These men were all in favor of a rifle not over .400 caliber, having a bullet of the above characteristics, and a muzzle velocity of from 2300 to 2500 feet per second.

When I designed the .400 cartridge I wanted just such a bullet. But we were not in production on the rifle. No firm had then been formed for its manufacture, and its popularity and success were problematical. Under the circumstances it was of course impossible to interest an ammunition company in the production of a distinctly new bullet. I therefore had to do the best I could under the circumstances by adopting the .405 W. C. F. bullet, and constructing the cartridge so that it would be easy to adopt the ideal bullet later. I am happy to say that that time is almost here. The success of the rifle has been so great that there is every likelihood that before the next hunting season its makers will be able to announce a heavier bullet, about 350 grains, with a much sharper point, a heavy jacket, and less lead exposed at the point. While this new bullet will not make the rifle any more efficient for American game, for which it really had excess power, it should make it quite a little more effective for African game. As to what it will then do on African game can best be judged by what the present bullet did on such game in the hands of Doctor Chesterfield. The new bullet will probably reduce the muzzle velocity slightly, but the remaining velocity at over 200 yards will be increased, as well as the energy at all ranges, and the new bullet should hold together better on very heavy game. But really, when we read of Doctor Chesterfield's experiences it seems as though nothing better than the present bullet was necessary. Relative to the work of his rifles in Africa, Stewart Edward White recently wrote to Edward C. Crossman, "The .405 was almost heavy enough to justify discarding the .465 Holland and Holland, but not quite." All of which makes it look very much as though the .400 was destined to be the one best all around rifle for African shooting.

Charging buffalo killed at ten yards with .400 Whelen solid through brain and passing out back of ear.

Doctor Chesterfield's article follows, and the reader can judge for himself.

East equatorial Africa is remarkable for the variety and numbers of its game life, which ranges from the largest of the pachyderms to the little dik-dik antelope weighing not more than a house cat. The hunter who plans a trip to this country naturally desires to collect as varied a bag as possible, and is at once confronted with the subject of what guns to take. As is often the case, the more he delves into ballistics and discusses the subject with his friends, the deeper and more confusing it becomes until he feels he must have a dozen guns to be adequately equipped. After this critical stage of the disease has been safely passed, he wisely sets out to select as few guns as he can possibly get along with.

In my case I was able to reduce it to three rifles and a shotgun. The goal was reached in somewhat this manner. I must have a heavy, double, cordite rifle for dangerous game in thick cover. A light rifle for the small antelope, obtaining meat for porters, and for long range shooting. Lastly, an intermediate gun shooting a bullet around 300 grains weight at a velocity of about 2500 f. s. for the heavier antelope, buffalo, and lion. For hunting alone this latter should be an all around gun, with fairly flat trajectory, light enough to be carried comfortably, and hitting a hard enough blow to be depended upon to turn a charging rhino, or any number of other emergencies occurring and too numerous to mention. An ideal arrangement would be to have all the working parts, as well as the sights of these guns interchangeable, as it would eliminate carrying spare parts for more than one gun.

My favorite gun in the Rocky Mountains had for years been a sporting .30-06 Springfield. Its shooting and killing qualities were so well known that it at once drew a place on the list. The .405 Winchester had been to Africa so many times and always brought home a favorable report, but the parts were not interchangeable with the Springfield, so it was not considered. About this time Major Townsend Whelen perfected his .400 Whelen rifle which embodied everything I was looking for. Although Major Whelen advised me that he had not designed the rifle for African game, but for moose and other big game of this country, a casual comparison of the ballistics of his rifle and the .405 Winchester showed a greater muzzle velocity by 250 feet per second, and an increased striking energy of 600 pounds in the Whelen. The bullets of both cartridges were of the same weight and caliber.

Early in my hunting I began to show a preference for the Whelen rifle over the Springfield, which grew as the time went on, till at the end of the trip I was using it for such game as kongoni and zebra, taking the Springfield for all smaller game. I do not mean to imply that the Springfield will not kill the larger game. The old adage that it is not what you hit the game with that counts, but where you hit it, applies in Africa as elsewhere. My difficulty was in being able to apply that principle at long range and on running shots accurately enough to insure killing cleanly with the smaller gun. Where one has large herds of game and myriads of tracks, it is often impossible to follow up and finish off a wounded animal. For this reason I preferred using a gun which invariably brought the animal down on the spot, if hit anywhere near a vital place.

My greatest difficulty with the Whelen at first, strange as it may seem, was that of overshooting at ranges of from 300 to 400 yards. I might add, however, that before leaving home I had, because of lack of a suitable range, been compelled to target the gun at 100 yards, guessing at the sight elevations beyond that distance.

An earlier experience of overshooting was so identical with later ones that I will relate it as an example.

Coming over the brow of a hill on the Embu Plains a large eland bull was sighted some half mile off. By careful stalking, mostly on hands and knees, we were able to approach to what I judged was 400 yards, when the animal detected us, though uncertain as to our nature as we were fairly well hidden in the long grass. He would run in a semi-circle for a short distance and stand to look again. Realizing that it was useless to try to get closer I decided on a kneeling shot, and aiming well up on the shoulders fired and missed. The white hunter I had with me as guide felt sure I had overshot. The eland ran some distance before standing again, when I repeated the shot, aiming for the same place, and to my surprise missed again. The white hunter still insisted that I was shooting high, so I decided that if I had another shot at that eland I would shoot at his legs and thereby eliminate any argument as to the height of the shot. An hour later the opportunity for another shot presented itself at about the same distance as before, so aiming for what seemed to be ridiculously low, I fired, killing the animal on the spot. The gun was sighted point blank for 100 yards and I had not raised the sight in any of the shooting, being content to merely aim higher on the animal at the longer ranges. The only explanation I can offer for shooting high was due I believe to the heat waves which are very bad in the low country at midday. Upon examination of the eland I found the bullet had broken the shoulder, penetrating well into the chest cavity, where it had destroyed an immense amount of lung tissue.

Previous to the above related experience I had shot a great deal of game with the .400, but always at closer ranges, and in every case killing it cleanly with a single shot. The list included kongoni, zebra, waterbuck, crocodile, and hippotamus, the latter with a solid bullet (full jacketed) which passed completely through the skull. While hunting elephant on Mt. Kenia, though I had with me a double-barrelled .475 express rifle, I felt so certain of what could be done with the Whelen that I decided to use the heavier gun only in an emergency case. Two shots through

Elephant which ran less than 100 yards after receiving two .400 Whelen solids in lungs.

the lungs, using solid (full jacketed) bullets brought the elephant down before he had gone one hundred yards. The task of cutting into such a huge beast was so tedious that I made no attempt to recover the bullets.

Several days later the Whelen again did excellent work, bringing down two buffalo in quick succession. The first one at 150 yards with a soft nose bullet which broke the shoulder high up, lodging against the shoulder blade on the opposite side and mushrooming perfectly. The second buffalo was brought down at two hundred yards by a full jacketed bullet which struck the hind leg rather low, breaking it, and passing diagonally through the body to the opposite side where it lodged against the shoulder.

My second eland was brought down by much the same shot as the first eland, at a paced distance of three hundred yards, the destruction done by the bullet in both cases being identical. Two rhino were killed, each with a single shot placed immediately back of the shoulder. Shooting through the top of the shoulders of a lioness with a soft nose bullet at twenty-five yards broke both shoulder tips and the spine, the bullet lodging under the skin.

Though I used two hundred rounds of ammunition in the Whelen during the hunt, the foregoing incidents were selected as the best, showing what may be expected from the gun in Africa. Except for the lioness the game mentioned is very large, thick skinned, and much more tenacious of life than our largest American game. The English hunters who saw the rifle were much impressed with the beautiful finish of the barrel, and with the ease with which it was kept clean when using Lubaloy bullets.

Doctor Chesterfield's experience shows what can be done with a good rifle by an experienced hunter and a good shot. At the same time I do not believe that he wishes to convey the impression that he regards the .400 as an absolute stopper on heavy, thick skinned game such as elephant, rhino, and buffalo. While a rifle like the .400 will be found to be extremely satisfactory for average work on such game, and much easier to handle and to shoot accurately and quickly than the heavy cordite rifles of excessive recoil, yet I believe as a matter of life insurance it should always be backed up by a heavy elephant rifle firing at least a 480-grain, full-jacketed or "solid" bullet at least M. V. 2000 f. s. This would particularly apply in approaching heavy, dangerous game in thick jungle.

And now, in summing up the evidence to prove my assertion that bullet weight should not be sacrificed to velocity, and that the most reliable bullet is a long, heavy one with a thick packet and very little lead exposed, I have saved the cream for the last. This additional evidence comes to us from the pen of Mr. Leslie Simpson. Mr. Simpson went from Berkeley, California, many years ago to Africa as a mining engineer, where he was quite successful. His love for hunting and fishing took him afield at every opportunity, and when he retired from active business he adopted the life of a naturalist in earnest, and he has hunted extensively throughout Africa, Europe, Asia, and North America. In Africa alone he has hunted almost continuously for over twenty years, in which time he has secured a number of record heads. Among them he prizes his "Giant Eland" the most highly. Besides the enviable private collection which he keeps in London, he has contributed a very large collection to the Los Angeles museum, smaller collections going to other institutions. He has also done a great deal of flashlight photography of wild life, and were it not for his retiring nature and fear of appearing forward, there would be some remarkable pictures brought to light, which I believe are shown only to intimate friends. Doctor Chesterfield informs me that Mr. Simpson has one picture of four lions taken within a few yards of the camera which is a masterpiece.

Mr. Simpson's diversified experience over the above mentioned period qualifies him to be a very conclusive authority on the use of

.400 WHELEN BULLETS RECOVERED FROM GAME

1. Soft point, 100 yards, bull moose. In at fore shoulder, broke shoulder, and recovered under skin on opposite side.
2. Soft point, 100 yards, bull moose. In at hip, broke hip bone, and recovered under skin on opposite side.
3. Pieces of soft point bullet taken from neck of very large crocodile. Bullet had simply pulverized the spine.
4. Soft point found in lungs of eland after having passed through the heaviest part of the shoulder.
5. Full jacketed bullet from African buffalo, passed through the hind leg, breaking it and the point of the shoulder on the opposite side, and removed from under the skin.
6. Soft point, broke shoulder of a water buck, lodging under the skin on the opposite side about center of ribs.
7. Soft point, passed through ribs of a rhinoceros, and found in chest cavity.
8. .375 Holland and Holland magnum bullet taken from the shoulder of a buffalo. Show for comparison in mushrooming effect with the .400 Whelen bullets.
9. .400 Whelen soft point bullet before firing, for comparison.

the rifle on game. Among experienced English hunters in Africa he is regarded as holding extremely sound views on all subjects, and certainly as knowing more about African shooting and weapons for it than any other American sportsman. I think we are extremely lucky in obtaining such a clear-cut, sound, common sense statement of the killing power of various cartridges and bullets from him. Mr. Simpson's letter follows:

"I have just received your letter, and I note that Doctor Chesterfield has been in touch with you. In your letter you touched on every point on which I might have criticised the .400 Whelen

cartridge. I quite realize what your difficulties were in adapting a rimless case of American manufacture to an American-built action in .400 bore. When I saw Doctor Chesterfield's rifle I thought that the short, light bullet would not be effective on the larger African antelope and animals in the buffalo class and larger, also I thought the caliber too large for use on the

Lioness—Both shoulder tips and spine broken with .400 Whelen soft nose.

smaller antelope. While the cartridge would, I think, give great shock and explosive effect on fairly large animals with a bullet properly placed, penetration would be lacking and one would not feel entirely safe with this bullet against dangerous game. I say this because I have been shooting for four years a .416 Rigby rifle with 410-grain bullet, M. V. 2350 f. s. With this velocity the long bullet mushrooms well on soft-skinned animals and holds together sufficiently to insure good penetration on large animals where it has work to do in tough, massive tissue. I felt after doing much shooting with the .416 that the bullet could not be lightened and still have the rifle efficient in its class. I think you will be greatly improving the .400 by adapting a 350-grain bullet, even at the expense of velocity, in both soft nose and full jacket. In the case of the latter I would advise a round nose heavy jacket as I have found the pointed solids somewhat erratic in course after entry, sometimes turning over and lacking penetration when they do so. We now have available in England several well developed cartridges of the .400 type, the .416 Rigby, .400 Jeffery, .425 Westley Richards, and .375 Holland Magnum. All except the latter are too big for a small bore for general shooting, and too small for a big bore as stoppers. I therefore think that what we need to develop for Africa is a powerful cartridge of smaller caliber than .400.

"So that you may better understand my point of view as to rifles for Africa I would say that I am strongly convinced that on any one shooting trip there only two very different types of rifles should be taken. One for life insurance purely as a stopper and for use on elephant. The other an accurate, fairly light weight rifle of from .30 to .35 caliber, for use upon all game small and large. The latter rifle should use one weight of bullet only. It should be capable of killing all game from the little dik-dik to elephant, and should be accurate and sweet shooting with a long heavy bullet for penetration as well as sufficient velocity to give fairly flat trajectory, as shots very occasionally may be taken up to 350 yards on the open plains. Bullet weight should not be sacrificed to velocity. I have three cartridges in mind which gave me very good results and were tried out over considerable periods of African shooting, so I will put down my experience with them. Firstly, the .350 Rigby Mauser using a 310-grain, round nose bullet at about 2000 f. c. I used this rifle about fifteen years ago for two years, doing a great deal of shooting with it. I can safely say that I have never shot a better killing rifle capable of handling any sort of game. Its penetration was first class. The bullet held together well under great stress in the larger animals and mushroomed enough on soft skinned and smaller animals. The rather high trajectory of this rifle finally caused me to switch to the .350 Rigby Mauser shooting a 225-grain, pointed bullet at about 2600 f. s. This is a good rifle, kills well a good part of the time, and much of the time fells an animal much quicker than the slower-moving, old 310-grain bullet, but the bullet is too short and light and has not the killing ability over such a wide range of animals as the 310-grain, and I certainly do not feel quite as safe with the .350 Magnum as with the old .350 and heavy bullet.

"Secondly, the .318 Westley Richards 250-grain round nose bullet starting at about 2500 f. s. I gave this cartridge a long and good tryout and it seemed to me as near as possible to the ideal. The long bullet with small lead point (not the patent capped which I though not so good) gave excellent penetration, mushroomed O. K. on small and soft skinned game, but held together sufficiently to do good work on shoulder shots and raking shots on big animals. Its velocity is high enough to render accurate shooting without too much guessing of distance at the ranges over which most of the shots must be taken. The rifle which I had made to shoot this cartridge weighed eight pounds and gave no unpleasant recoil. It is a popular cartridge among men who have lived in Africa and had much experience and who use only one rifle and dispense with the big double.

"Thirdly, we come to the .30 Springfield cartridge. I started to use this cartridge in 1910, and have done most of my shooting with the 220-grain bullet since that date. This bullet speeded up to about 2300 f. s., satisfies me and I am at home with it under all conditions. This bullet in the lungs or paunch will not kill as well as the 180-grain going faster, but it will break both shoulders of big animals and is better than the 180 on raking shots and large animals. Two years ago I took with me the open point 180-grain Western ammunition and have used it continuously since. While I have not the confidence in it that I have in the 220 when in a corner with my back against the wall, still results were much better than I had been led to expect after using a few pointed soft point bullets on a previous trip, which went to pieces like smoke. I like the Western 180 so much that I am taking it with me on this trip.

"What I think the average American coming out to shoot in Africa should bring is a rifle taking a .350 cartridge with a heavy bullet and as high a velocity as possible compatible with pressure and weight of rifle. My idea would be a 275-grain bullet at 2500 f. s., or if this gives too much pressure or would necessitate the rifle being too heavy, then cut down the velocity rather than the bullet weight. I think that any rifle which can be developed above the .350 approaches the big bores too much and should be left at home. On this point my .416 is just a fifth wheel of a rifle crank and has no place in one's battery on a single shooting trip.

"Going back to the big stopping rifle, I think that one should use just as large a caliber and as heavy a bullet as he can handle, and nothing smaller than the .450 caliber with 480-grain bullet. I have for twenty-three years used a .577-1—750 and find no trouble from recoil nor slowness in handling when using it on game. It has also been forcibly impressed upon me that one's big rifle should be a double ejector, and not a magazine rifle, for a magazine becomes a single shot in certain cases.

"If you could develop a .350 cartridge with heavy bullet yet fair velocity, which could be used in a medium weight rifle, I think you will have solved the problem for an all around rifle for Africans as well as a very useful one in America, perhaps with a lighter bullet."

Summary

I think we have now presented sufficient evidence in the form of the experience of the world's most noted hunters to prove our contention that the heavy bullet that mushrooms and still holds together, retaining most of its weight, is usually a far better killer and a more reliable projectile on large game than the lighter bullet at very much higher velocity which almost always flies to small pieces, and when it does so fails to penetrate through heavy bone and hard muscle.

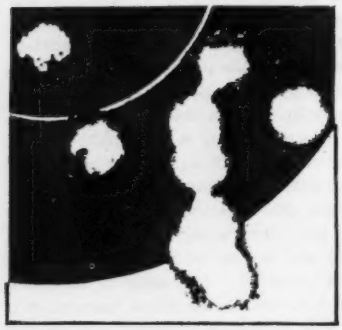
High velocity is always desirable because, other things being equal, it flattens the trajectory and minimizes the misses that come from small errors in the estimate of the range. But velocity should not be increased to the point where it causes the particular bullet to fly to pieces on impact, nor should good bullet weight be sacrificed to velocity.

We have shown that the ability of a bullet to mushroom and yet hold together on impact at a certain velocity depends upon the construction of the bullet. That so far as

Rhino killed with one .400 Whelen solid back of shoulder, arrow pointing to bullet hole.

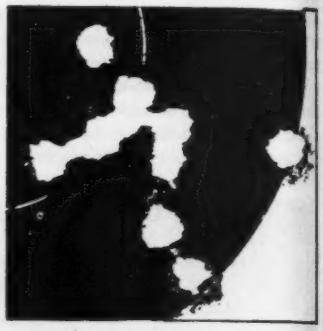
our experience goes, the bullet that will hold together at the highest velocity is one with the thickest jacket that can be successfully drawn by modern methods (about .03-in.) and with only a pin head of lead exposed at the point. We know that such bullets perform as they are intended a large majority of the time when

(Continued on page 13)



A Dream Come True

By R. S. Crosier



Left:—Ten shots at 10 rods with .38 Zettler. Right:—Ten at the same range with the .25/20 Ballard. Center Illustration:—The Author and his .38 Zettler.

ALONG with the passage of years are vanishing the good old days when our American rifleman would sit for hours heedless of time, cleaning, reloading, greasing patches, swedging bullets, tinkering old moulds, experimenting with some favorite grade of powder and following to a finish each of the one hundred and one notions of the gun crank mind.

They were the days still fresh in some of our memories when each shooter fired a specified number of shots each day and that was all. Perhaps five to seven shots each, and how many times has the possible been made and again upon the old Schuetzen range where we tried our vented barrels the handicraft of all famous and reliable old makers. Then look back in Shooting and Fishing. Those days are now a rifleman's dream and so the dream came back to me. Out of the years the spirit rose again in me and I decided to try out my skill again. So I first took down my little Kentucky, unscrewed the breech which seemed to look pleasing at me, then to my little pet .25-20 Ballard. Before I was aware I was at the stove with my lead pot and dipper and a piece of pure lead. I moulded out about 75 or 100 bullets, and after balancing them on the scales I had only forty. These weighed 92 grains. Then I put on the lubricant pan with four ounces of beef tallow and two ounces of Japan wax; stirred it in well together, then dipped each bullet in the hot grease up to the top band, then placed each on a blotting paper to cool. Then I used a home-made cake cutter and wiped off all grease on the butts, looked over my shells and picked out forty which appeared to be the right size. These shells were of Remington manufacture; then I capped these up with N. 1½ U. M. C. primers. These I charged with twelve and one-half grains weight of F. F. G., and pushed each bullet down as only to expose two bands.

Now, my private range is on Lagona Island in the middle of the Wappingers Lake. Here I have two short ranges; one 25 yards, the other 10 rods. These shooting points are all exposed to the weather at the muzzle of the rifle. The targets are set up at a point northeast by north so I can get the full sight and I settled down to do my best. I shot just 40 rounds—20 at each target. Each 20 shots were fired without cleaning and without looking over the string until finished. I have done better, but the weather conditions were unsettled and the sun was successively out and under a cloud all through my tryout. Yet I was not surprised to see each string of 20 shots was within ⅞ of an inch. This was shot at 10 rods with globe and peep sights with elbow and hand rest. So I thought that you would like to see those even if it is not a perfect

group, but it will prove enough to see that the little .25-20 Ballard is still in the ring. This gun was made by Jim Marlin, New Haven, Connecticut, patented November 5, 1861. The barrel is the original Winchester make, well preserved and in excellent condition. This did so well I thought I would get busy with another favorite.

Now, I happened to see the good work done by Mr. Britt of Oakland, California,—good luck to him. Well I happen to be blessed with one of our old timers, which is one of the guns used by the Perry-Warner Riflemen. As you are aware, each of these two men had a team; Perry would challenge Warner—so on. I found one of Warner's men in the group of spectators on my range one day. This J. P. Jones is more than a gun crank, and he observed our shooting that day without a word until after the last shot was fired. Then he was so pleased with the results he has been my close friend since. Now my rifle is of a Swiss type of stock and butt, large full hand trigger guard, double set trigger, caliber .38 large globe and peep sight, ½ octagon and weighs 15½lbs. and is a beauty. This gun was made for our famous Old Timer, T. J. Hollaway, by Zettler, no date, but full engraved by hand and high cheek piece. So out I go the second day after my string with the .25-20.

I went through the same process, only no dirty shells to wash or cap, expand or trim, but as I did not wish to use a grooved ball and lubricant, I selected a mould which casts a Colt pistol ball, caliber .36. This ball has two grooves and a good square base. I moulded up 50 or 60 and to my surprise each ball weighed 133 grains. So all I had to do was to roll them around against my thumb nail to remove all fins. Then I used a 12 guage wad cutter and stamped out some linen patches. These patches I dipped in my own lubricant (beef tallow and Japan wax).

I follow the real old methods of charging. I use little glass bottles in each of which I put 36½ grains weight F. F. G. King's semi-smokeless. Now all packed I am ready to go.

Now to the range mentioned, where I put up my target and to be sure that I was right I placed No. 2 target near No. 1 to sight in on.

The linen patches just cover nicely over the bare of the ball. After loading the powder I place this patch on the muzzle, center the ball, then with the starter I start it on its way and I do not have any trouble running this ball home very easy with the rod, just resting it on the powder (no pressure).

I tried one shot at No. 2 target. This was at 10 rods. To my surprise a clean hole was cut at 3 o'clock well to the right. So with a couple of light taps on the front sight I tried again. All was well and the ball struck well in the bull. Then I shot 10 shots at No. 1 target. No wiping for the entire group. Now I was well pleased to do this with elbow rest. I put up another target. On this I fired 10 more shots and after looking I found I had done a little better. Group No. 1 measured 4 9-16 inches, No. 2 was 4 -5-16 inches. I think with a little careful doctoring of the bullet I can easily make four inch strings.

Temperament and Marksmanship

By F. J. Kahrs

TO BE successful in anything one must have more or less temperament; mostly less, however, in rifle shooting, because too much temperament will surely result in disaster sooner or later—mostly sooner. Immediately I can almost see the vast multitude of riflemen take issue with this opinion. There are many subjects to draw on as examples to prove or disprove the theory that the successful rifleman, I mean the one who has achieved a high place in rifle shooting history, is the type which is almost entirely devoid of temperament. Analysis of the lists of riflemen who have won important national and international contests in recent years, indicates that most of them are of the calm and dispassionate type, methodical of movement and action.

Rifle shooting calls for more or less thought and study, and regardless of the temperament of the man, this study must result in a thorough understanding of the fundamentals of rifle shooting for these lead later to simplification of the problems which arise suddenly as the result of the changing conditions made at the long distances of shooting and in the day-to-day changes of the weather and its resultant effect on the flight of the bullet.

Therefore I say, regardless of temperament, the successful shooter must necessarily have a thorough knowledge of the problems of rifle shooting. From then on enters the question of temperament. Personally, I am convinced that while skill is prerequisite to the winning of championships, temperament unfailingly tips the balance. This being true, even the highest degree of skill is rendered impotent by the vagaries of a hyper-sensitive temperament which is likely to impair judgment at a critical moment.

These conclusions are based upon some twenty years of intimate association with riflemen, and from long observation and analysis—to a degree—of shots both military and civilian, there stand out instances of marksmen in whom the extremes of temperament are apparent.

Consider, in support of my contention that —all other things being equal—the shooter who has absolute nerve control ultimately achieves the victory, the case of Alfred P. Lane. Lane is an Olympic Champion, who ranks high in pistol and revolver shooting and who has demonstrated proficiency as a marksman with a military rifle at extreme distances. He has a temperament that is only a degree removed from zero. I mean to say that if the rise and fall of human emotions were actually charted his would be a degree above zero and the line would be straight across the sheet. This indicates control of the nerves, and control of the nerves is necessaryily the big factor in eithe pistol, revolver, or rifle shooting. As a matter of fact, it is the dominating influence in any sport.

I have studied Lane many times while he was shooting and long ago came to the conclusion that his control was natural—it was neither forced nor affected and that consequently his fine shooting came easily while others worked their heads off to equal or excel his score.

In his every day work Lane is no different than when in action on the pistol range. He seems to be of such even temperament that one might say he has a fixed personality. In other words, his motions are timed, deliberate, methodical, almost to the point of exasperation.

On account of Lane's peculiar temperament and his extraordinary shooting ability, many of the shooters at Sea Girt, Camp Perry and elsewhere have studied his methods, trying, as it were, to ascertain "what he had on the ball." It is of peculiar interest to know that with arm extended and assuming a characteristic but naturally easy position while firing the revolver or pistol, no one could perceive the slightest movement or tremor in the arm. "It is absolutely frozen" was the remark heard many times from those who watched that arm.

I have used Lane as an example because he represents the extreme of his type. There are others of his type who have likewise achieved success in this sport. For instance, Sergt. Fisher of the Marines, present International Rifle Champion, and Walter Stokes, also an International Champion. There are of course dozens of other well-known marksmen of this type whose names might be mentioned. If you are one of the type you will be able to better solve the question to your own satisfaction.

We are now taking the other side of the discussion—the marksman who is high strung, who has no control of his nerves or of his actions. In going over the list of those riflemen of this type who have achieved distinction on the range I am at a loss for names. There is one man however who stands out above all the rest and who has shown marked proficiency and that man is "Larry" Neusslein, a member of the International Rifle Team and who has always given excellent account of himself.

Anyone who knows "Larry" Neusslein also knows that in action he resembles a Mexican jumping bean. He is all over the place; he is up and he is down. He talks a blue streak even while firing offhand score at 300 meters working hard for anything over ninety. Yes, Larry does work hard; anyone who shoots offhand at 300 meters or any other distance has to work hard for anything he gets. But Larry also works hard in other positions. His temperament doesn't make the scores come easily.

I may be wrong in my statement that the calm and dispassionate Lane doesn't work hard for his scores. Perhaps he works just as hard as a temperamental chap but he doesn"t show it.

Of the two types I would prefer the man with control. He is liable to use better judgment; the temperamental man is liable to take a chance. Unless I am badly mistaken, Walter Stokes works hard all the time. I have seen him take six or seven minutes to fire a shot in the offhand position. He would hold the gun and his breath, it seemed, until we ourselves were in a dripping perspiration, and then he would lower the gun and gasp for breath. But remember Walter comes through more often than he fails.

When Walter was a student in Central High School in Washington some ten years ago, I gave him some of the first coaching lessons he ever received. I have coached him now three times in the International Dewar and I will say that I thoroughly enjoyed bringing him through the Dewar because he is a holder and he takes the dope.

Another quiet, plugging type who has achieved success in small bore shooting is Ralph McGarity, whose phenomenal small bore shooting at Camp Perry last year was easily the sensation of the meeting. Those who know "Mac" also know that he goes about his work in that dispassioned and determined manner and with calm deliberation which presages a hefty effort for the chap who would overtake him.

Those of us who have seen some of the old-time long range chaps in action can easily recall the rhythmic movements of Winder, Emmerson, Tewes, Richard, Keough and Hudson. The winning of a match was never certain until these men had fired their score. There are hosts of others, of course, who were just as dangerous as these men but not so much of the quiet type. As for instance, Casey, Wise, McBride, Simon, and so on.

Now, by taking the extremes as I have done in the cases of Neusslein and Lane, we do not necessarily prove anything definite, but if we will consider the whole question thoroughly, we must, of course, illustrate the point by some practical examples.

How often on the rifle range are we cautioned to be quiet, "You are annoying the shooters"—"Less noise, please"—"Cut out that loud talking," etc. All of this because some fellow who is working hard for a score did not have his mind on the task before him and being of a naturally nervous temperament, the remarks of those in his vicinity were disturbing. He could not concentrate. That chap seldom gets anywhere in the shooting game. He might more by luck than ability win a match now and then but he will never become a consistent performer.

It is on record that professional men, whose vocations require control of the nerves, turn to pistol and revolver shooting for relaxation and divertisement from the cares and worries

of their profession. Some of our best pistol and revolver shots are doctors and most of these are dentists.

So much for direct application, and generalities may now be considered.

The ideal type of shooter is the man who makes all his preparations before he comes out on the firing line. His score book is all prepared, the dope bag is in order, the rifle is in tip-top shape, the sights are blackened, there is a front-sight cover and a back-sight cover to protect the sights while the gun is not in action, he has not forgotten the sling, he has his squadding ticket, he knows the number of his target, what relay he is on and the time he is due. When a scorer calls out his name he answers, "here," picks up his bag and is ready to take his place on the firing line promptly and without any further preparations other than sticking the fork rest into the ground, opening the dope bag, arranging the score book and adjusting his spotting scope. He fires his first sighting shot promptly and is helping to keep up the schedule of the range.

In this type we have the methodical chap who is deliberate, cool, calculating and determined. He has made a careful study of the game and he knows that if he is to achieve a high place in rifle shooting he must do everything just so. He leaves nothing to chance. He knows how much one point of wind moves his shot and the effect of a fish-tail wind on the bullet.

He has forgotten that he is a brakeman on the C. B. & Q. and that he has a wife and six children at home. He only knows that he is one of several hundred shooting, say, in the President's Match and he wants to take back to the wife and kiddies one of the N. R. A. medals to prove that he can shoot.

The chap who is always worrying about his rifle and ammunition is the bird who must alibi himself for his short-comings. The man who designed the stock of the rifle he uses was cross-eyed and thought he was making an arm for a chair; the carpenter who put the cross hair sights in his telescope thought he was making a window frame; the fellow who bored the barrel thought he boring a tunnel, and the poor ammunition manufacturer, he never did know anything about making cartridges; somebody set his target on crooked and the score keeper wiggled his left ear just as he fired his first record shot, but the robber at the other end of the range who waved the red flag at him after he had five 5's in a row was no better than the worst of the others. Happily there are few of this type. They are passing out because they get scant sympathy.

The small bore shooting game has developed more "Alibi Ikes" than the military game ever thought of. Still, this is a healthy sign because the discussions which eventually result tend to produce many interesting and oftentimes valuable suggestions.

We have heard so much about the relative merits of arms and ammunition in the past that it is time for us to hear something about the relative merits of the shooters themselves. Did the winner win because he was the best shot or was it due to some special equipment? Many times after a man has won an important match with an excellent record we have heard it remarked, "He ought to win—look at his equipment." This is unfortunate because it detracts from the performance of the man who is entitled, first, last and all the time to all of the credit for winning that match. The tools which he used were merely instruments by which he was able to complete the job. If they were of the best he was helped just that much but without his own great ability, the finest of tools would have been useless. It is a very interesting subject from whatever angle one wishes to study it.

One reason, perhaps, why a rifle team cannot be selected successfully on past performances as individual shots is because while a man may rate high as an individual rifleman, he may rate very low as a team man, and the reason for this is not hard to find, as most of our team captains know from sad experience. There are men who will not submit themselves to the rule of others. There will always be men who know more about the shooting game than the team captain and the coach. Having coached many rifle teams, I speak from experience with many types of men and in all fairness I must say that in most instances a heart-to-heart talk with the recalcitrant produced the desired result.

Most new team men do not realize that the responsibility for the success or failure of the team rests with the team captain and his coach and not with the team. The team captain is selected for his ability to command men and his knowledge of shooting; the coach for his ability and experience. The men of the team are usually of experience and skill. All that is required of them is subordination, courage and ability to hold.

The American system of coaching by pairs permits the shooter to concentrate his mind on holding the rifle steadily, aligning the sights and the bull's-eye correctly, and coordinating all of these with the trigger finger at the proper moment. The coach worries about the center of impact, that is, keeping the group diameter centered in the bull's-eye and watching for sudden changes in the wind.

Temperament usually shows up in a team match if it shows up at all. In an important team contest, if the shooter is at all temperamental, he begins to worry about the possibility of "spilling the beans," he imagines his eyes are going back on him and then he thinks of the humiliation of being the last man on the team, with the low score that caused the defeat of the team.

Yes, here is where temperament plays an important part. Sometimes it is possible to pull such a shooter out of the "slough of despond" into which he has fallen and bring him back to his normal self. Many times, however, it has been necessary at the last moment to call on one of the substitutes who is known to be "hard boiled" though not quite so good a performer.

There is also the type of man who is a home range shooter. He is the chap who rolls up immense scores on the home range in practice and in official matches, but very often this man never comes up to expectations in the big shoulder-to-shoulder open matches. This does not prove that he is not a good shot but he is only a good shot under certain conditions. Temperament handicaps him away from home. He is truly the home range shooter.

It is said that the color of the eyes plays an important part in rifle shooting. Perhaps it does, but as we have no record of any scientific data based on tests to indicate the relative value in the color of eyes, we must consider the question in the light of what has taken place. While it is true that marksmen with gray eyes appear to have won a majority of the important rifle matches in the past decade, it must also be considered that gray eyes predominate, that is to say, the different shades of gray eyes. Any eyes which are not brown and blue are called gray eyes. The brown eyes are in the minority and it is only natural to expect there would be fewer shooters with brown eyes and therefore fewer competitions won by shooters with brown eyes.

Therefore, taking this question by and large, it is a very interesting subject for discussion and consideration. These views are merely those of one who has had many opportunities to observe America's premier marksmen in action at home and abroad. They cover a period beginning with the first National Match at Sea Girt in 1903 and continuing on through the years up until the present, taking in all styles of shooting, both civilian and military, small bore an big bore, Schuetzen and free rifle, which, by the way, are one and the same, the free rifle being the high-toned name for the Teutonic form of shooting.

Speaking of the Scheutzen game, brings to mind an exhibition of the effect of temperament which occurred at one of the big bund meetings of long ago.

With perfect self-possession and calm deliberation one of the contestants had placed two shots on his target almost in the exact center of the black. It was a three-shot match and such a start meant that the prize—a thousand dollars in cash—was well within reach.

As he prepared to fire the final shot it was apparent that his self-possession had suddenly left him. He tried unsuccessfully several times to pull himself together and place the last shot where it should be—in the center with the other two—but the vision of that thousand dollars in gold kept coming between sights and the target and after almost a half hour of the hardest kind of work he finally touched her off and after a few seconds of anxious waiting the red flag slowly waved across the face of the target. This man actually collapsed.

None of the conclusions herein made are to be considered as definite but are merely offered for the consideration of those who are interested either because they make a study of the subject or actually participate in the sport. In either case, they are offered for what they are worth.

EXTREME LOADS IN THE PEACEMAKER

A Tale with a Finis -:- -:- *By F. C. Ness*

BEFORE initiation, notes on the punch and kick (before and after) of the .45 Single Action were wont to excite my youthful wonder. Reports from frontiersmen, who had seen this hand gun's heavy slug plow through half a dozen inches of wood and kill on the other side, furthered it. Some years later, a letter from an oldtimer living in the State of Mississippi, who had followed many a chuck wagon over most of the cattle trails of the Southwest, in which he stated that nothing, however tough, could stand up before the Peacemaker at 25 yards, served to enhance this wonder. I finally commenced shooting black loads in the gun and was thrilled by the recoil and disturbance of each discharge. This kick was uniform, and it did not take long to get used to it. The barrel would roll upwards, and, on the round butt, the gun seemed to revolve in the hand. When the generous plow handle was properly held, it seemed to absorb the shock, and no unpleasantness was experienced when a few occasional shots were fired. A long seige with peewee loads engendered a contempt, bred of familiarity, and I found that the modern, smokeless, factory, full load didn't have or create any more disturbance than a black powder .38 short in the Smith & Wesson pocket revolver. So I am strong for making the "old mule" live up to its reputation.

I had been fed up on the soot of black powder, and decided to make her "do her stuff" with different available brands of smokeless. I had some knowledge of the viciousness of smokeless overcharges, and had at least *some* respect for my own wholesomeness, so I went slow at first. Also, I am a strong endorsee of the limitations manufacturers place on smokeless charges in their published recommended loads, but, in the interests of my intrigued curiosity, I was willing to suspend caution for the time being. Primers, cases, and the recoil give some indications of excessive pressures when the danger line is too closely approached. But, because metal thickness and tenacity varies in different batches and therefore in different components, these pressure signs are not absolutely reliable. And the experimenter who carries on without a pressure gun and soft-metal crushers, ventures into deep water—more times than he realizes.

Dangerous pressures are created by overloads of powder, by maximum loads and an over-size hard bullet, by normal charges of dense powder and a long or deep-seated bullet that compresses the powder, by a too-soft bullet that funnels out in a chamber without a reduced exit of barrel diameter, or in the vacant space between cylinder and barrel, and by the wrong type of smokeless in a given type of gun, or by an obstruction in the barrel itself. In the case of the wrong bullet or barrel obstruction this will be shown by a burst or bulged barrel or a cracked breech. And in the case of the wrong charge, by raised, flattened, or pierced primers, and expanded cases, and often more emphatically by a blown-up gun and burst cylinder.

Few shooters are heedless enough to use charges in excess of those recommended by firms and experts in position to know the safety limits of the gun and powders in question. Nevertheless, they may unwittingly do so at times, through inadequate equipment, wrong interpretation of published tables, slip-ups in powder measure adjustments, ignorance of a certain powder's characteristics or of the load's relation to the bullet, failure to check up charges on an accurate powder scale, and through the loading of a double charge into a case. Unless extreme care is exercised, it is easy to throw two charges into the same shell, and, in the case of dense powders which occupy a minimum space, it would easily go unnoticed in a large case, like the .45 Colt black. Major Hatcher wrote me last summer: "The du Pont Company recently had correspondence with a shooter who thought he was loading seven grains of No. 3, and when the charges were weighed, they averaged eleven grains."

Chauncy Thomas once stated in *Outdoor Life* that a full load of black powder *dust* would shatter the cylinder every time. Once a burst .45 cylinder was shipped to him, and he said, "Fourteen grains of du Pont No. 80 and the wrong bullet." A rash writer came out in the old "Outer's Book," and attributed the blowing up of a .45 S. A. to twenty grains of King's Semi- in F. F. F. G. granulation. This was found clearly incorrect, the accident being due to an obstruction in the breech. The du Pont Company diagnosed a burst .45 Colt to an overload of No. 3. Later on, after all this, I blew up the Peacemaker with a recommended charge of dense smokeless, and the bullet weighed as admonished, but it was longer and gave more resistance than the bullet (same weight) intended in their "Recommended Charges" list. All this should have served as a warning to me, but it merely whetted my desire to ascertain what and how much the Peacemaker would and could stand.

I used several types of powder: King's Semi-, representing black powder; du Pont Schuetzen, true bulk, representing bulk for bulk smokeless; du Pont No. 80, modern bulk, which fills considerable space per grain weight but is more active than true bulk and must be loaded by weight; du Pont No. 3, nitrocellulose dense, which with No. 5 has considerable volume for a dense powder but is much more violent than No. 80; and Hercules Bull's Eye, nitroglycerine dense, which is very quick burning and has less volume per give charge than any other handgun powder. It burns well under lower pressures than the nitrocellulose dense powders, and can be used in lighter charges with feather-weight bullets, or with milder primers. This makes an excellent powder for cellar shooting, or gallery charges with 144-grain Collar Button, or the .45 Colt round ball weighing only 139 grains.

I commenced with No. 80, and, knowing the increased factor of safety in a light bullet, I used the 190-grain Bond bullet at the outset. I eliminated the danger of a too soft bullet, by using a temper of at least one to twenty. In the harder bullets I guarded against the danger of an over-size bullet by carefully "mikeing" the barrel diameter, and seeing that the bullets measured a true .454 inches. The mean minimum lands measurement was .449-inch, maximum .451-inch; the grooves a true .454-inch. The increased resistance caused by resizing shell necks to .452-inches, and by crimping the case mouths to the bullets was taken into consideration when maximum loads were reached. Change in bullet depth in the case was avoided by using the gun as a single-loader. Charges were weighed on an accurate Bond scale and worked up slowly, as little as one tenth of a grain at critical times. Primers and shell expansion were carefully watched for what pressure-signs they might indicate. In short, I was forearmed in every possible way except the most necessary one—pressure recording equipment.

The old Single Action Army Colt's revolvers were not guaranteed for smokeless. Major Hatcher informed me that those later

issued with serial numbers greater than No. 160,000 were made especially to withstand the higher pressures of smokeless powders and are supposed to be safe for a working pressure of not over 14,000 pounds per square inch. At the factory they are fired with a twenty-five percent overload, or at 17,000 pounds. For comparison, only 6.5 grains weight of du Pont No. 3 with the heavy Bond bullet gives a minimum pressure around 13,000 pounds, and a maximum pressure charge of this same-weight load might easily get on the other side of the precautionary limit, wisely set at 14,000 pounds per square inch.

Using U. M. C. case, measuring 1.265 inches, I worked up to 11.75 grains weight of No. 80 with the shell lip crimped to the 190-grain bullet. Then the crimp was left off and the charge increased to 14.1 grains weight with an increase in accuracy. So far everything was normal. Then the crimp was put on again, and the primers showed signs of enlarging a bit. The accuracy was noticeably poorer. I shifted to the short U. M. C. shell, only 1.13 inches long, loose and plain, and increased the charge to 15.1 grains weight. This gave more kick, primers indicated more pressure, but the accuracy was better than with 14.1 grains, crimped. This charge (15.9 grains according to Universal Powder Measure table) filled the shorter case nearly full and was compressed by the seated bullet. I didn't dare crimp the shell-lip, and instead of resizing the case-neck, I went back to 11.75 grains weight and used the 235-grain Ideal bullet. I worked this charge up to 12.9 grains weight, getting best accuracy and the right twenty-yard elevation. Necks resized to .452-inch gave groups from 1½ to 2⅜ inches at twenty yards. Only slight pressure indications. Then I increased the charge to 14.1 grains weight and got plenty of pressure indications, and only finished off the five shots because I wanted to compare groups. As I expected, this load was very erratic, giving 7⅝-inch group, over five inches larger than 12.9 grains weight. After the sharp recoil and swollen primers of this 14.1-grain load of No. 80 and the 235-grain Ideal, I remembered Mr. Thomas' diagnosis: "Fourteen grains of No. 80 and the wrong bullet," and didn't care to go further with this powder, but switched to Bull's Eye.

Using the same short 1.13-inch case and the same 235-grain bullet, I worked up from 3.85 grains weight Bull's Eye to 5.7 grains, with increased accuracy, shooting at fifty yards. Five grains weight is the correct recommended charge, and, at 5.7 grains, pressure signs commenced to show. The accuracy was good, giving 3-inch and 3¼-inch groups at fifty yards. These were shot at midday in hot bright August weather. I waited until cooler October and worked the same load up to 7.7 grains weight Bull's Eye before becoming frightened into submission by the increasing pressure signs. All these were resized to inside neck diameter of .452 inches, holding bullet friction tight without crimp. The 260-grain Bond bullet was not experimented with for extreme loads with Bull's Eye, but one lot was loaded one-tenth grain under the recommended charge, for accuracy and penetration behavior. This load, 4.9 grains weight Bull's Eye and the 260-grain Bond, gave better than factory accuracy, and though mild, shot through four-inch poplar trees with ease.

Again adopting the long black powder shell, I commenced with 21 grains of King's Semi-plus 4½ grains of Schuetzen priming. This filled the long case up to the base of the 235-grain bullet. Pressure signs were apparent but the accuracy was good. The load was increased to 24.75 grains weight King's Semi-FFG and 2 grains weight Schuetzen, without increasing pressure signs. With the bullet deeper than normal pressure indications immediately became stronger, though the accuracy was better than with the normal seating. Now, using the same priming charge, the King's was increased to 27¼ grains. This filled the long black powder shell to ¼-inch from the mouth, and the 235-grain bullet was seated with the case-lip barely covering the the top groove. This seated hard, and, while the powder was compressed as it was, this was as deep as the bullet could go without crushing the grains. I believe this was the most powerful load I have loaded in the Peacemaker. At each explosion the gun bucked like a sunfising cayuse, and a couple of cylinderfuls would kick the stock loose from the lock frame and trigger guard. I estimated I was getting .38-40 ballistics, as it was the flattest flying load of any I ever tried at long range in the .45 Colt. From fifty to 125 yards I could keep on a ten-quart pail by aiming near the top edge. Though flattened primers and swollen cases showed plenty of pressure, I didn't deem it as dangerous as some of the others and shot a great many of these loads afield. The accuracy was extra good, some five-shot groups going under two inches at twenty yards, while the majority of each group would cut circles less than an inch in diameter.

Reverting to the shorter smokeless case, I filled it with Schuetzen to the base of the 235-grain bullet seated normal, or twenty-five grains. This showed enough pressure to make its safety doubtful. The same load in the long black powder case leaves the powder loose, shows normal pressure, and shoots with twice the accuracy. The same load with the 260 Bond in the short case leaves the bullet one band out and is very accurate. With the bullet seated normal the Schuetzen is compressed and primers swell and flatten out. The accuracy remains good. When full loads of King's or in combination with Schuetzen were used the accuracy was not up to the 260-grain and Schuetzen alone. That load of 27½ grains plus two grains Schuetzen with the 235-grain Ideal Hollow Point should have satisfied me. It was as clean as pure smokeless, as accurate as I could hold, and the flattest possible trajectory, and was as powerful as any load I had so far loaded. But I was bent on destruction and was anxious to try out du Pont No. 3. So I did and got plenty of fireworks.

No. 3 should never be loaded over 6.5 grains weight. The six-grain load in the shorter, 1.13-inch, shell, with a strong U. M. C. No. 7½ or No. 8½ primer and resized neck will be the most accurate. The Schofield (.45 S&W) case, 1.129-inches, with the Western No. 1½ primer can also be used. However, I consider No. 3 a poor Peacemaker powder. It is better adapted to the .45 A. C. P. An old powder pamphlet started me off with the following tabulation: ".45 Colt ....250-grain bullet....7.0 grains weight....776 f.s. vel." Now that 776 f.s. didn't look like any too much velocity to me, so I commenced right off the bat with the recommended charge of seven grains weight in resized, short, U. M. C. cases behind the 235-grain. This gave the correct twenty yards elevation and a 3½-inch group. Dissatisfied with the accuracy, I tried the 260-grain Bond, but it was worse, only three of the shots grouping close enough to be measured. Both these loads showed pressure on the primers. Next, I crimped the shells on both bullets. The group scattered all over the twenty-yard target. Clearly, pressures were too high for good results.

In all this shooting I used the No. 2 U. M. C. primer with the bulk-for-bulk powders, and the No. 7 Western with the others. The only trouble so far experienced was one squib when the No. 2 was used with No. 80. But now I had my first trouble with leading; a sign of too much crowding of overly-hard bullets, when seven grains weight No. 3 was used. I tried the Bond .45 A. C. P. bullet weighing 240 grains and measuring .455-inches or one inch over-size for my Colt barrel. This was tempered one to twenty, and, driven by seven grains weight of No. 3, left no leading, though pressures were augmented. Only a few shots struck the target. This was the most dangerous attempt so far, and the Peacemaker still held up under the strain. I now felt that I had already gone too far and decided to lay off from it. Had I done so all would have been well.

But Independence Day was not far removed and I thought I would celebrate a little. Mr. K. V. V. Casey had sent me a du Pont Pistol Powder pamphlet when No. 3 was first placed upon the market, extolling the virtues of this, their then new, nitrocellulose pistol powder. This is what I read in the final paragraph of its subject matter in full:

"In going over the following table of charges it will be noted that in all cases the velocities are equal to, if not greater, than those obtained with black powder. At the same time the resulting pressures are *well below the limits of safety* of the various arms. This feature appeals to all, *especially those* who favor the larger bore revolver cartridges *originally designed for black powder.*"

The italics are my own. Immediately after, follows the table of charges with the following caption:

"We recommend the following charges:"

(19) 45 Colt 250 gr. bullet, Lead 7.0 grs. by wt. (No. 3) 776 f.s. muz. vel.

(20) 45 Colt 250 gr. bullet, Lead 8.5 grs. by wt. (No. 3) 900 f.s. muz. vel.

(Continued on page 13)

A Spotting-'Scope Stand

By Perry Frazer

THERE are forty-'leven varieties of stands for spotting 'scopes. A stroll down the firing line during any big match will disclose types ranging from the simple but efficient upturned camp stool to the more-or-less complicated ball-and-socket joint affairs. Most of these scope stands are satisfactory, differing largely in relative simplicity of construction and after trying first one sort and then another over a period of many years I at last have settled upon a simple, efficient and satisfactory type which has the added recommendation of being easily and cheaply produced.

The single fact that this type of stand presents no difficulties of construction to the amateur who finds enjoyment in tinkering his own equipment is among its chief recommendations, hence I am glad to pass the word along.

In the first place, this stand is so compact that it requires less than half as much space in the shooting kit as the spotting telescope itself, and the weight is less than a pound—twelve ounces, in fact, for the one described. Then its height may be adjusted from about sixteen inches down to twelve, even less than that. Again, it may be swung entirely around on its stem, or fixed rigidly, to cover one target only.

While the sawbuck-type scope stand is very efficient, for a shooter who, in the prone position, lies so close to the scope that he may look through it merely by leaning slightly to the left, the sawbuck has too many legs, and they interfere with one's left elbow, if not with the rifle.

For a spotting scope having a draw of about seven inches for the section just back of the one containing the object lens, select a six-inch length of thin aluminum tubing 1¼-inches in diameter. Saw through one side of this tube its full length, to form the scope-holder (A, Fig. 1), then drill a number of very small holes (B) along each edge of the cut. These will be explained further on.

Fasten a section of old curtain-rod in your vise, slip the sawed tube over one end, then, with a piece of soft wood, tap and spring the tube evenly until it will just let the second largest draw of your spotting scope slip into it. With crocus cloth smooth all the edges of the opened tube.

Select a piece of hard brass 1½ x ½ x ⅜ inches (C, Fig. 1). Drill a hole through it of proper size so that it may be threaded with a ⅜-inch tap. After cutting the threads, drill a small hole in each end of the bit of brass, and corresponding holes in the bottom of the aluminum scope-holder (A), fit bits of soft brass rod in these holes, and rivet the brass piece (C) to the holder (A).

The upright (D) is a nickel-silver fishing-rod ferrule, preferable ¾ inch in diameter. A brass ferrule will answer, but will wear more quickly and become loose. To the end of the male ferrule fit a round piece of hardwood about two inches long. Bore a hole in this plug and fit into it a piece of hard brass rod threaded to screw into the brass block (C). Warm the threaded rod, coat it with

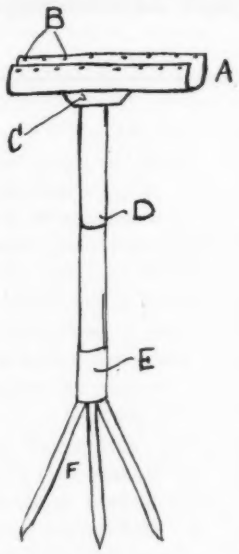


Fig. 1.

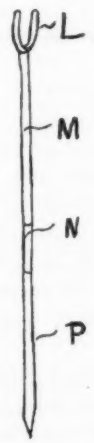
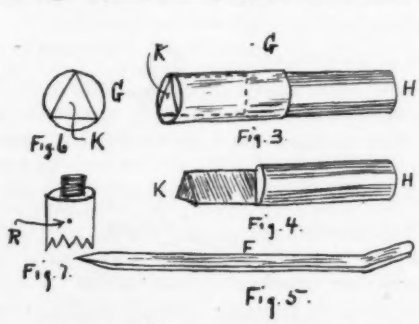


Fig. 2.

The Frazier Spotting 'Scope Stand

tacky shellac or ferrule cement, and turn it down so that only ⅜ inch of the end is exposed; that is to say, so that it will just fit flush with the bottom of the scope-holder when screwed home. Drill a small hole through ferrule, wood plug and threaded rod,



Detailed Parts of the 'Scope Stand

and rivet therein a hard brass pin (R, Fig. 7).

Next procure a 2½-inch length of brass tubing a trifle larger than the shouldered end of ferrule (female end). Cut a round piece of hardwood three inches long, and file one end to form a perfect triangle in cross-section for about 1¼ inches (K in the sketches). Over this end cement the brass tubing (G), then cement the round end (H) into the lower end of the female ferrule, so that the brass tubing (G) will become an extension of the ferrule (E, Fig. 1).

Procure a piece of steel about ⅜ inch wide and ⅛ inch thick. Cut off three 6½-inch lengths, for the legs (F, Figs. 1 and 5). Grind or file one end of each leg quite sharp, and bend the other end slightly, as shown in Fig. 5. These legs must be friction tight when pushed into the end of brass tube G, and as this fitting may be done with a file, it will be best to fit each leg perfectly, then mark it and the corresponding side of the tube with a prick-punch, marking the three legs 1, 2, and 3.

Now fit a piece of felt into the scope-holder (A), letting the edges extend over the outside about half-an-inch. Lash this felt in place, using a large needle and waxed thread, utilizing the small holes previously bored in the edges of the holder.

The stand is now complete. To try it, hold one hand around the steel legs, to prevent them from spreading too much, while you push them into the ground a depth of two or three inches. The scope should fit its holder very snugly; in fact, the holder's edges should be tight enough to spring over the scope and grip it rigidly.

The joint in the ferrule, if not too tight, will act as a hinge on which the scope may be swung back and forth horizontally; and it will also serve to regulate the height of the stand, by pushing the two members of the ferrule up or down.

On still days this device alone will serve admirably, but for windy days and for greater rigidity, the little support shown in Fig. 2 is well worth the effort required to make it. You may call it a rear guard. This is a 16-inch length of ¼-inch aluminum rod cut in half and the lower end fitted with a ferrule (N, Fig. 2) for convenience in carrying. At the top a flat piece of aluminum is riveted, bent to U-shape, and covered with thin leather from an old glove. While the scope-stand is adjustable for height in two ways, the rear guard may be adjusted only by pushing it the proper distance into the ground. It completes a rigid support for the scope, and may be used in finding and fixing the vertical movement of the scope.

The weight of this outfit need not be above twelve ounces, as mentioned above. Over-all length, 16 inches. Taken apart, for carrying in the shooting kit, 8 x 2 x 1½ inches. Perhaps some other tinkering shooter has evolved even a better scope stand than this. If so let the brotherhood hear about it by all means. Half the joy of marksmanship is being able to rely upon one's own ingenuity in getting together the proper range equipment.

The American Rifleman

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POLICE Commissioner Enright of New York City has arrived at the conclusion that crime would be reduced fifty per cent if the Government would assume control of all small firearms. As a method he advocates interstate transportation regulation in such manner that only persons using firearms in the line of duty would be able to obtain possession. In this, Philadelphia's Director of Public Safety, Smedley D. Butler, is quoted as agreeing.

Why Not Crime Control?

This suggestion is merely another of the unstable, impractical solutions which do not mean anything except that the many will be penalized for the offences of the few and that the criminal will continue to go armed upon his merry way.

It is not clear why those gentlemen who have undertaken to prescribe a panacea for crime waves, whose daily routine has to do with the suppression of the thug and bandit, should consistently overlook the obvious. If they think the situation calls for Government control, why do they not advocate and endeavor to obtain Government control of criminals? This is accomplishable through the simple expedient of enacting federal statutes with teeth and making the enforcement of heavy penalties mandatory.

Permitting only those who go armed in the line of duty to possess weapons is certainly not enough to eradicate crime nor will it stop regrettable though accidental injury or death to bystanders. A case in point is that of the prohibition agent who wounded Senator Greene while firing at alleged bootleggers. Charges brought against the agent have been ignored, no doubt very properly, under existing law, but that does not alter the fact that had the agent been a skilled shot, able to control within reasonable limits the flight of his bullets, the chances for such an accident would have been greatly lessened.

Whatever legislation may be enacted, either State or federal, to insure the proper use of firearms should include a provision making such shootings as that of Senator Greene actionable as criminal negligence unless the officer in question can produce credentials as a qualified marksman as evidence that any injury he may inflict on innocent third parties was the result of unavoidable circumstance. This of course could not be expected to absolutely eradicate unfortunate occurrences of this sort, but it would greatly reduce their likelihood. The man familiar with firearms thinks twice before he fires deadly weapons in congested localities and the careful handling of weapons, which is the ear mark of the skilled shot, is reflected in the low percentage of accidents among trained shooters.

While a majority of the proposed firearm regulatory laws have some good features, ninety per cent or more contain absurdities and inconsistencies. A glaring example of this is found in a new law proposed for the District of Columbia. For a criminal who is found armed in the commission of a crime a penalty of "not more than five years" is provided; for any person found with a concealed weapon on his person or in his car, no matter for what reason, a penalty of "not less than one year," is provided. This means that an armed criminal could get off with thirty days in jail while a marksman on his way to a range, or a citizen armed to resist a holdup, would have to serve twelve months.

The current agitation against crime which for the moment is centering upon anti-firearm legislation may ultimately take the form of laws which will accomplish much toward stamping out crime. Or the entire agitation may result in nothing more than some highly impractical and onerous regulations. In the meantime the States now being harrassed by bandits and hold up men might find some relief in the posting of rewards of $500.00 for the capture of an bandit alive, or $1,000.00 for the same gentleman *dead*.

* * * *

RECENTLY THE AMERICAN RIFLEMAN has been fortunate in being able to present to its readers an unusually good assortment of practical discussions pertaining to firearms and the art of shooting. As falling within this category may be mentioned Allen Border's "Home-Made Reloading Tools"; Paul Walter's "Rifle Cleaning Rods"; "Tinkering and Tampering," by L. Jacob; and in the current number "A Spotting Scope Stand". In other early forthcoming numbers there will be more such material.

Practical Articles

The notable feature of these stories is that, without exception, these contributions have come from manifestly practical men who are not known as writers. How many more such are among the readers of this magazine the Editors would be glad to know.

The Editors feel that printing material of this caliber is a distinct achievement on the part of the magazine, and will be glad to consider more material of this nature.

Extreme Loads in the Peacemaker

(Continued from page 10)

The words I italicized in the paragraph quoted fitted my case to a tee, and it disarmed me by breaking down my caution. I *do not blame the du Pont Company* in the slightest sense, but that line rceommending eight and one-half grains of No. 3 in the .45 Colt sure played havoc with my Peacemaker. The powder I loaded was of canister lot No. 7-19-72, and the 8.5 grs. wt. charge was omitted from the table on the canister label. There were only two bullet-metal designations—Metal Cased and Lead. The latter was clearly meant to name alloy bullets, but, of course, the temper was left optional. Now the 250-grain bullet mentioned might not have been meant to indicate *any .45 Colt bullet of 250 grains weight*, but it would seem so and could be taken that way. Now the closest to that weight I had in .45 Colt bullets was the Modern-Bond No. 454675, listed in their catalogue as the 260-grain .45 Colt bullet. I had a number of them in the usual temper (1 to 20) and weighed them carefully on my Bond scale. The mean weight was 252.5 grains, only 2½ grains over the weight of bullet recommended (for du Pont's 8.5 grs. No. 3 charge). I figured this was a legitimate weight-tolerance, since I had some Bond .45 A. C. P. bullets listed as 240-grain that ran over-weight by 8½ grains, cast from a mixture of 81 pounds lead, 4 oz. tin, and 16 oz. Best Babbit metal. Perhaps the du Pont Company thought their recommended bullet would be taken to mean the regular, round-nose, .45 Colt bullet with three bands. Everything in the load I used, including the powder charge, bullet temper, bullet metal, bullet weight, bullet diameter, followed faithfully the stipulations laid down in their recommended charge. The only thing at variance was: my bullet was longer, tending to confine the powder more, and had four bands or one more, three of them broader, tending to increase barrel friction, thereby setting up more resistance. Both of these differences would of course tend to increase already high pressures. And this augmented, in a load already unsafe, that extra 2½ grains bullet-weight, and a tolerance of one-tenth grain in weighing the powder charge would only serve to give those high pressures an added impulse. Still, I had "me doots" about the business. But Independence Day was tomorrow, so I thought I'd risk it for the sake of the Glorious Fourth of July, and I loaded up five U. M. C. smokeless shells as described.

Bright and early next morning I was in a sand pit behind the house and aimed the Peacemaker offhand at an earth bank and pulled the trigger on the first cartridge. There was a loud report, a little kick, and I clearly saw the spurt of dirt thrown up by the bullet. The gun remained intact. I examined the fired shell and found the primer flattened out to fill the pocket, and slightly raised about the indentation of the firing pin. The case was swollen and the ejector rod wouldn't push it out. But none of this was particularly alarming because I had seen the same results from previous excessive loads. I had been forced to pound out expanded shells with a stick and stone before this. So I stood up on my hind legs, stuck cartridge number two into the cylinder, held the gun far out as possible from my face, aimed at the bank, and pulled. The same loud report followed, no more kick than before, and again I thought I noticed the spurt of dirt thrown up by the bullet. However, I was surprised by the unusually broad white flash, and felt a little twinge of pain in my trigger finger. and I heard something whine over the bluff which at first I took for the ricochet of the bullet.

I looked at the first joint of my index finger where a small portion of flesh had been torn away, and I noticed the Peacemaker was wrecked. About six feet forward I found a piece of the cylinder and the mangled remains of cartridge number two, which had burst. I was unable to find the bridge of the frame, which had torn loose and broken off at both ends. Evidently it had caused the whining sound I had heard. The gun received no further damage than this outside of a twisted ejector-housing, or tube, and a bisected cylinder. The gun was photographed on the floor of my veranda exactly as the explosion left it in my hand. The barrel was loose in what was left of the threaded ring, but the ejector tube held it together. The photo shows the first cartridge case still held firmly in one of the cross-sectioned chambers. The refractory shell was split from rim to muzzle and burst apart, and the flared-up front of the top chamber, in which it was discharged, shows that the brunt of the attack occurred at the forward end. The base of the shell was not damaged.

The three remaining cartridges shown in the cut were sent to the du Pont Company for analysis, and were tested in their Brandywine Laboratory with the following results:

No. 1.—8.5 grs. wt. No. 3, No. 454675 Bond, 25500 pounds pressure, Revolver Copper used.

No. 2.—8.5 grs. wt. No. 3, No. 454675 Bond. 31600 pounds pressure, Rifle Copper used.

No. 3.—8.6 grs. wt. No. 3, No. 454675 Bond, 30400 pounds pressure, Rifle Copper used.

Since in this gun nothing over 14,000 lbs. pressure is safe, the pressures as found were twice as high as they should have been, and I was lucky to get out of it with only a slight scratch. Owing to the extremely high pressures obtained with my three loads the Brandywine Laboratory made the following test with the same powder and bullet:

No. 4.—7.5 grs. wt., 20700 lbs. Pressure, Revolver Copper used.

No. 5.—6.5 grs. wt., 16700 lbs. Pressure, Revolver Copper used.

No. 6.—6.5 grs. wt., 13300 lbs. Pressure, Revolver Copper used.

Since No. 5 has supplanted the use of Pistol Powder No. 3, they loaded ten cases with the 260-grain Bond bullet and No. 5 powder in charges varying from 5.5 grs. wt. up to and including 7.5 grs. wt. Their recommended charge of du Pont No. 5 with this bullet is 6.5 grs. wt., and advise against using over 7.0 grains weight of this powder. Results of their test with No. 5 and Bond No. 454675 follow:

No. of Round	Weight of Charge	Mean Velocity	Mean Pressure
(7)	5.5 grs.	670 f. s.	6800 lbs.
(8)	5.5 grs.	688 f. s.	8400 lbs.
(9)	5.5 grs.	693 f. s.	7700 lbs.
	Average..	684 f. s.	Av. 7533 lbs.
(10)	6.5 grs.	810 f. s.	11800 lbs.
(11)	6.5 grs.	812 f. s.	9800 lbs.
(12)	6.5 grs.	796 f. s.	....
	Average..	810 f. s.	Av. .... lbs.
(13)	7.0 grs.	848 f. s.	....
(14)	7.5 grs.	...	18800 lbs.
(15)	7.5 grs.	...	21200 lbs.
(16)	7.5 grs.	...	21600 lbs.

Before I received the Brandywine report, I wondered if there might not have been some extraneous contributing cause for the high pressures which blew up the old Peacemaker. I had some trouble with the cylinder turning by the stop in the floor plate before I fixed it, and wondered if in this instance it had not by some means reverted to the old trouble. This of course would impinge the bullet on the edge of the barrel-metal instead of into the barrel opening, which would of course make something go. As far as I could see the barrel was unharmed, but to be certain of placing blame where blame belonged, I shipped the wreck to Major Hatcher, and he correctly diagnosed the trouble as directly and simply due to excessive pressures raised in the breech. He "miked" the barrel and found it O. K. in every respect, and said the indexing of the revolving mechanism was perfect. The barrel is doing service in another Peacemaker frame, and the other parts are being assembled into a .38-40 Frontiers Model.

Since I was not hurt, I do not regret having had this accident, and should this article act as a warning to other experimenters and cause some incautious reloader to hesitate about exceeding recommended safe charges of smokeless powders, I shall be downright glad I did explode the old mule.

An Analysis of Game Bullets

(Continued from page 5)

fired at muzzle velocities of 2400 to 2500 feet per second. To be conservative, we have placed this velocity at 2400 f. s. for such bullets.

Certain bullets of rather complicated construction, designed to retain a portion of their body intact, have lately appeared on the market. The core of the bullet is divided at the rear of the ogive by a cup, the front part of the core has a thin jacket, and the rear portion a thick jacket, the front part of the core is of soft lead, and the rear hardened, etc. It is believed that such bullets are needlessly complicated, expensive to make, and almost impossible to fabricate so that the center of gravity coincides with the center of form, and that therefore they will tend towards inaccuracy and unreliability. At any rate they are sure to lose one-third of their weight, while our preferred form of bullet seldom loses any appreciable amount of its weight. From what we know now we would much prefer the old reliable two-piece bullet.

Our experience has shown that bullets of calibers less than 6½ mm. (.265-in.) are not

really reliable on game larger than deer, and that for the largest game, (excluding the thick skinned African game, lion, and tiger) nothing larger than .30 caliber is necessary, although larger calibers are not undesirable if the sportsman can shoot them without flinching. If the sportsman should prefer to use a rifle such as our ultra high velocity .25 calibers on any large game including deer, then it is thought that he had better rely on the high velocity and the bullet that flies to pieces or "explodes," because if bullets of this caliber be made to hold together they do not mushroom to a sufficient diameter to cause much damage to tissue.

All that we have said in this series of articles should be construed with common sense. For example, we have shown that the 180-grain expanding bullet at M. V. 2700 f. s. is amply powerful enough for any American big game. The point brought out here is that a proper 220-grain bullet at 2400 f. s. is still more reliable.

The advantages of high velocity, particularly for certain kinds of shooting, cannot be gainsaid. For example, sheep and goats have often to be taken on at very long ranges. If one were hunting in a country where sheep, goat, moose, and bear were to be found, and were armed with a .30 caliber rifle, it is thought that the best results would be obtained by using the 180-grain bullet at 2700 f. s. for all long shots on sheep and goats, and the 220-grain perfected bullet at 2400 f. s. on moose and bear, and for close shots at goat. With a 7 mm. rifle the 139-grain bullet at 3,000 f. s., and 175-grain perfected bullet at 2400 f. s., might be similarly used.

THE END

Mass, Weight and Muzzle Energy

(Continued from page 2)

38 times 111 equals 4218, which we round off to 422 foot pounds as before and all the work on paper has been 38 times 111, which is easy to do. The number 38 we see differs from 38025 by less than one part in a thousand, disregarding decimals and the error in measuring speed is much more than that.

The .30 Springfield cartridge has a 150-grain bullet at 2700 f. s. Following our rule should multiply 27 x 27 x 15 x 222 to get the muzzle energy, but the last two numbers are the same for us as one and a half times 222 which is 333, which shortens the calculation to 27 x 27 x 333. But that last number is so near to 333 1/3 that we may divide by 3 instead of multiplying by 333 which reduces the figuuring to 27 x 27 divided by 3, which is the same as 27 x 9 or 243. The nature of the load tells us that it is not 243 but 2430 foot pounds for the muzzle eenrgy of the cartridge. If we had calculated it eaxctly we should have got 2427.6 or rounded off to 2428, and other results near by will be obtained if some other slightly different value for *g* is taken instead of 32.174. They are all near enough.

In calculating the effect of a change of speed on muzzle energy, a small change in speed of a few per cent may be taken as changing the energy by twice as much. For instance we had above a 200-grain bullet at 2000 f. s., giving 1776 foot pounds of energy. If we drop the speed to 1900 f. s. this is a drop of 5% and the energy will drop about 10%, not exactly but near enough for most purposes. Taking 10% from 1776 we, have left 1598 foot pounds and calculating it as usual we should get more eaxctly 19 x 19 x 2 x 222 equals 1603 foot pounds.

The data we use in calculating muzzle energy are the weight of the bullet, which is exact, and the speed which varies from shot to shot by several foot seconds, sometimes a hundred or more, sometimes only a few f. s. We can average a large number of shots and thus arrive at the real average speed, but even then it is not dependable to a single foot second and a difference of one f. s. in a thousand will make a difference of two foot pounds in a thousand foot pounds. Therefore we do not need to calculate muzzle energy to the exact units of foot pounds, much less to decimal fractions of a unit.

Getting a Kick Out of Hunting

(Continued from page 1)

wouldn't leave, the dog came in and found the quail for me. I petted him and hugged him until he shook himself impatiently, wanting to go on.

If I could get the thrill out of killing a quail now that I could then it would be worth a million dollars to me. But the hands of Time's clock never stop moving until they stop for good. Aye, aye! many the quail have I killed since then, and many the turkey and many the deer, until buck ague is away back in the dim past. But all the coolness I have acquired since then,—all the coolness, all the ability to place a bullet true, all the art of sending a shot pattern to its mark, have been at the expense of the wild thrill now forever dead. Lucky the man who can have buck ague, for he is young—if not in years, at least in his shooting.

"Backward, turn backward, O Time, in your flight,
Make me a child again, just for tonight."

Aye, aye! But the hands of Time's clock never turn back though they stop in the end. But you who can still have buck ague, rejoice exceedingly, for many is the great shooting day still before you. For all ye veteran shots, who can place a bullet here and there just where it should go, cool and deadly as fate, my sympathy is with you. The game is dead; the kick is gone. You are old, maybe prematurely old, but very old in the ways of shooting, and the hands of Time's clock never turn back.

Sights

By L. P. Holmes

FUNNY, isn't it, the ideas different shooters get in years of experience with firearms? As an example Chas. Askins tells us in a recent issue that in a tight corner he would not care for a gun equipped with peep sights, regardless of size of aperature and place of fixture on the rifle itself. Personally just the opposite seems the logical choice for me. Were I going into Africa today with chances of taking on the worst the Dark Continent had to offer, I'd stake everything on one of Lyman's creations.

I've looked at a good many deer over a rifle barrel and have found it far easier to connect on a buck, rambling at full speed (which is real speed, by the way), when using peep sights than with open. When shooting hurriedly at rapid moving game there is a very strong tendency to overshoot through the drawing of too coarse a bead. And personally, when using a peep sight on game, I forget there is a rear sight on the gun. Shooting with both eyes open I am only cognizant of the front bead and it greatly simplifies matters to thus be conscious of a single sight to control.

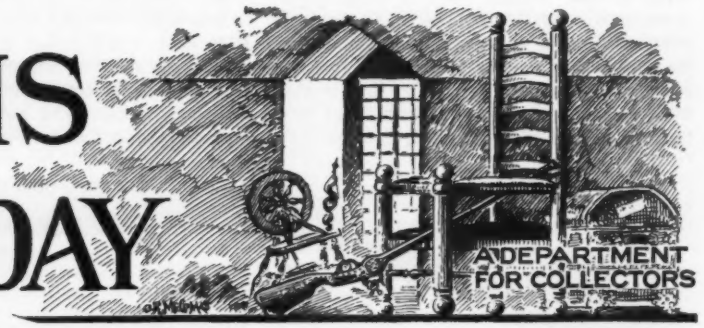
In aerial shooting with a .22 caliber rifle at small objects such as walnuts, stones, washers, .22 cartridges, etc., it is quite necessary in doing consecutive runs to get an absolute bead on each object thrown. For, be it known, this natural pointing talk is all guff. Now and then it might work, but in consecutive work on small objects it doesn't pan out worth a darn. Consequently a large aperture, close to the eye, which gives to one who understands its usage the same effect as would be secured with the single front bead, plus of course the accuracy only to be secured with two sights; seems to be the logical combination with which to secure the best results.

Regarding its effect upon the sooting of beginners, whether at game or target, the peep sight brings results much more quickly than the open. I have taught several youngsters to handle the rifle and in every case they would do far superior shooting when their rifles were properly equipped with peep sights. Almost invariably with open sights these youngsters would have a very large percentage of high shots, and in shooting hastily at rapidly moving game they continually overshoot.

All of which may not mean anything to anybody else. As I said before, experience teaches all of us individual tricks.

Speaking of target sights for the small caliber rifles it is well remembered by all of us how certain shooters would not give in to the superiority of the telescope over iron sights. From the returns of the last matches, however, it looks as if a man must use the glass if he expects to be up amongst 'em in the "any sight" class. No doubt very excellent shooting has and can be done with iron sights but it seems as if the consistent winner over the regulation, outdoor small-bore ranges depends on the "glass eye."

FIRE ARMS OF YESTERDAY



Conducted by Capt. Jerome Clark

The Hawken Rifle

By Horace Kephart

THAT was a funny answer that someone gave your correspondent "Smoothbore" when he asked why Hawken rifles, which were favorite arms of our western frontiersmen from 1820 to 1860, were now so scarce that a collector could hardly find one.

"When the breech-loading rifle forced them into disuse," said this man, "they made good crowbars, an article not easily obtained there then."

The barrel of a Hawken rifle was not made of stiff steel, but of soft iron. Maybe our old-timers knew little about rifles; but they did know something about crowbars.

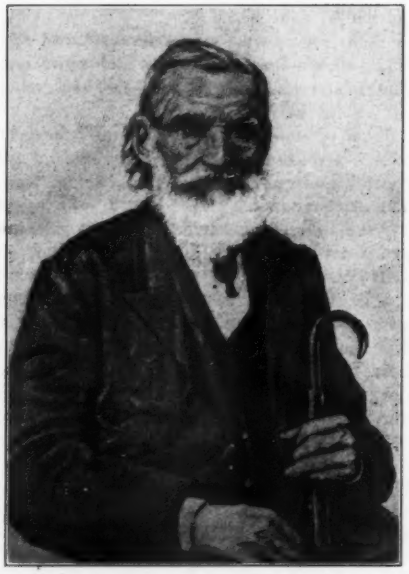
* * *

THERE were only a few thousand Hawken rifles made (they were hand-made, mind you), and most of them were put to as hard service as firearms ever saw. So they just wore out. To get an idea of what they had to go through, read Ruxton's "Life in the Far West." This book, although written in the form of a romance, is really the most truthful picture of the fur hunters, in the day of Jim Bridger and Bill Williams and Kit Carson, that has ever been written. It is pretty raw in spots, but it is the truth. For many years it was out of print. So, in 1915, I brought out a revised edition of it, with annotations, which is now published by The Macmillan Company, 64 Fifth Avenue, New York, under the changed title, "In the Old West."

Most Hawken rifles went to the scrap-heap. If you find one nowadays that is in good condition, it is either a left-over from some old gunsmith's stock or an heirloom that was luckily preserved with more care and sentiment than most Westerners bothered themselves with.

In this connection one may as well draw attention to the fact that there is probably not now in existence a single specimen, in good condition, of an American rifle of the Colonial or Revolutionary period, or any time during the flintlock epoch, that ever saw actual service in big game hunting or Indian fighting *on the frontier*. Just think what such usage meant, and what a gun would look like that had been through it.

The good-looking relics now preserved in collectors' cabinets are guns that were kept by farmers and others in the settled districts where there were no wild Indians and no game bigger than deer. This explains why most of the old, so-called "Kentucky" rifles now treasured are weapons of small bore; in other words, just deer guns.



Samuel Hawken

The real frontiersmen, who went after elk and buffalo and Indians, had to use rifles that threw heavy bullets, for the simple reason that the accurate range and killing power of a *round ball*, other things being in proportion, depends on *caliber*. A muzzle-loading rifle that takes a ball of, say, 100 to the pound (.357 caliber) will shoot straight to 100 yards and kill deer neatly. That was all the gun that a farmer or a town sportsman needed. But the buffalo hunter and the Indian fighter required one that would throw a knockout at twice that distance and hit a vital spot. So the real Leatherstockings, from the very beginning of rifle shooting in America on down to the end of muzzle-loading times, generally used the half-ounce ball (.524 caliber) or thereabouts. I am not guessing at this: it is a fact of ballistics, and is supported by a mass of documentary evidence that would fill a large room.

It is queer how the misspelling, "Hawkins," persists, instead of the proper form, "H-a-w-k-e-n," which is the way these St. Louis riflemakers themselves spelled and pronounced it.

The Hawken family has been well known in St. Louis for a hundred years. The first directory of that city, published in 1821, contains the entry:

"HAWKEN, Jacob, gunsmith, 214 North Main Street."

All subsequent directories containing his or his brother Samuel's name spell it the same way. The "brand" is on many an old Hawken rifle, usually "S. Hawken, St. Louis." I used to know several men who had worked in the Hawken shop, helping to make these very guns, and they always pronounced the name "Hawken."

I am aware of the following entry in Mr. Sawyer's "Firearms in American History," Vol. III:

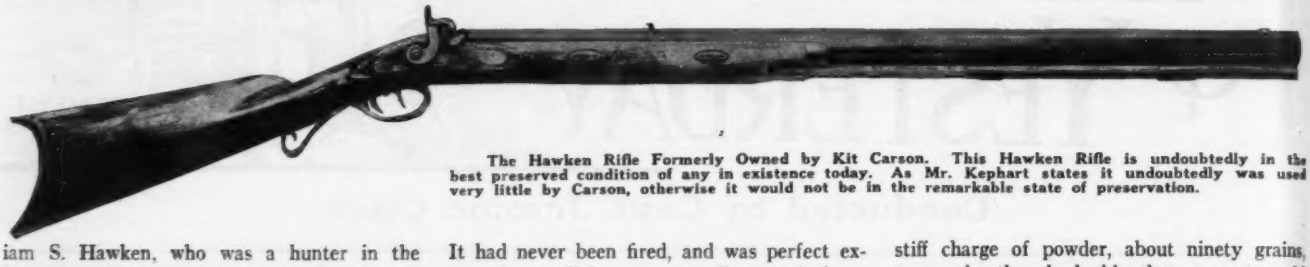
"Hawkins, Henry (pronounced Hawken, and by his sons so spelled), St. Louis, Mo., beginning there in 1808. Formerly in the Harpers Ferry Armory. Previously, Lancaster Penn."

But I fear there is a discrepancy here. What evidence is there that Henry Hawkins was the father of Jacob and Samuel Hawken and that he was established in St. Louis in 1808?

From documentary evidence that I collected in St. Louis in 1896, and from my personal interviews with Hawken workmen, the following facts are derived:

Jacob Hawken was born in Hagerstown, Md., in 1786. He is said to have been of Pennsylvania-Dutch descent. He was established as a rifle maker in St. Louis before the Territory of Missouri became a State. He died there of cholera, during the great epidemic, May 9, 1849.

His brother Samuel, born in Hagerstown, October 26, 1792, joined Jacob in St. Louis in 1822. From their first location on Main Street the shop was moved to Washington Avenue, near Main. Samuel continued in the business alone after his brother's death until not long before the Civil War. His son, Samuel William S. Hawken, who was a hunter in the Far West, induced the old man in 1849 to visit Colorado for a change of scene after the troubles he had been through during the epidemic. But old Samuel did not like the wild frontier and soon went back home.



The Hawken Rifle Formerly Owned by Kit Carson. This Hawken Rifle is undoubtedly in the best preserved condition of any in existence today. As Mr. Kephart states it undoubtedly was used very little by Carson, otherwise it would not be in the remarkable state of preservation.

By this time the Hawken rifle shop had passed into the hands of William L. Watt and Joseph Eterle. From them it was bought by J. P. Gemmer in 1862.

I knew Gemmer well. His shop at 700 North Third Street, near the Eads Bridge, was a favorite rendezvous of sportsmen. Sam Dorman and Andrew McBean and many others of the Central Sharpshooters and other clubs (Harry Pope will remember them) were among Gemmer's customers. Probably Capt. Charles Askins has been in Gemmer's shop many a time, for Charlie was a full-fledged rifle crank even in those days, back in the nineties, driving the gunsmiths crazy with his alterations, just as the rest of us did, and often coming over from his home in Illinois to join in our matches at Bobringville, Creve Coeur Lake, and other ranges.

Gemmer still had a few Hawken rifles stored away in his back room, but he would not part with them for less than the thirty or forty dollars that they used to bring, and nobody would pay so much for a mere relic in those days.

He said: "Samuel Hawken, after he retired from business, still could not keep away from the old shop. That was where his heart was. He was not happy anywhere else. He would come in and talk with me about old times in St. Louis and about his trip to Pike's Peak. In his old age he determined to show us one more specimen of his handicraft. So he donned the overalls and apron, took the tools, and made with his own hands the last Hawken rifle that ever was produced by a member of the old firm. It was a regular 'mountain rifle' taking a half-ounce ball. He sold it to Mr. Charles F. Filley."

This, the last Hawken rifle, is now in the collection of the Missouri Historical Society in St. Louis, along with another Hawken that I gave the Society in 1901 and which will be mentioned later.

Gemmer said that Samuel Hawken had some stubborn, old-fashioned notions. "He had his own ideas about business. He was proud of his rifles and would sell nothing else. He would not sell the Colt revolver, though urged to do so. Mr. Colt begged him to handle his revolvers, and I believe he would have made much money if he had done so; but he was stubborn and would not."

About 1894 I bought a Hawken rifle from William Albright, who had been in the gun business and had a few of the old stock left. It had never been fired, and was perfect except for a slight rust extending an inch or two down from the muzzle. It lacked the maker's name on the barrel, but Albright said the Hawkens would not put their "brand" on a gun that they made for a firm that made guns themselves, as his father did. So, to settle the gun's origin, I took it to Charles Siever, a former workman under Jacob Hawken, who was now practising the gunsmith's trade on his own hook, though he was nearly eighty years of age. Siever stared at me over his specs as I came in, threw up his hands, and roared:

"Ach Gott, here comes dot verdammt rifle crank vonce again yet! Vat der dyfel new contraption you vant now?" And he laughed till his fat belly shook.

When I told him what I was after, he offered no opinion until he had removed the gunlock and examined it under a bright light. Then he exclaimed:

"Yah, dot is chenuine Hawken rifle. I make dot lock, py golly, mineself, more as forty year ago."

This rifle was almost identical in appearance with the Kit Carson rifle, made by Samuel Hawken, as the barrel brand shows, which is here figured. The Carson rifle (which was only one specimen from his armory, and was very little used by him) bears the inscription:

Presented to
Montezuma Lodge
No. 109, A. F. & A. M.
By
Brother Kit Carson
May, 1868

It was found in the lodge room at Santa Fe, New Mexico, years ago, by my old friend Emerson Hough (who, by the way, started his first novel, "The Mississippi Bubble," while a guest in my home in St. Louis). He described it at length in *Field and Stream* when he was editor of that magazine.

My Hawken was a plain half-stocked and ribbed arm of ten and one-half pounds, most of the weight being in the thick barrel. The stock was of maple, stained brown, and had a cheek-piece but no patch-box. Its total length was 59¾ inches. It had a thirty-four-inch, full octagon barrel of about .52 caliber, taking a 217-grain ball. The stock was 14½ inches from front trigger to hollow of butt, with 2½-inch drop. The front sight, of German silver, stood only a shade over three-sixteenths of an inch above the barrel, and 22¾ inches from the rear sight, which was of rounded buckhorn pattern.

This rifle was intended to be used up to 200 yards by simply drawing fine for short range and holding a bit high for shots beyond 150 yards. This called, of course, for a stiff charge of powder, about ninety grains, as a rule, though double that amount could be used for extra range and shock. Even with common charge the bullet would flatten some and tear a big hole, if cast of pure lead. The ball, with greased linen patch, fitted snugly enough to require firm pressure to shove it down with the ramrod. In emergencies calling for quick reloading, it would be dropped naked down the bore, after wetting with saliva so that powder grains would adhere: then it would not fall out. I have seen a muzzle-loading rifle reloaded in this way in ten seconds. That is the way the olden-time buffalo runners did it when charging on horseback.

I tested the rifle for recoil with charges running all the way up to nearly equal weights of powder and lead. My charger happened to hold just forty-one grains of FFG Deadshot. With single charge there was no perceptible recoil, shooting in the hip-rest position. With 82 grains there was about the same light recoil as with a ten-pound .32-40-165. With 123 grains of powder the kick was about the same as with a .38-55-330 of same weight. Then I ran the powder charge up to 164 grains, and finally to 205 grains, behind the 217-grain ball. At this stage of the game, Sam Dorman, who had been beside me, backed to the rear of the shooting-house. The old gun reared and snorted, but I experienced less shaking up than with a Springfield .45-70-500 fired from the same offhand position. With these excessive charges the barrel fouled considerably, but there was no sign of the bullet stripping. I knew it wouldn't, patched as it was, practically swaged into the barrel beforehand, and through that very slow twist.

With the 82-grain charge I would land in the 12-inch black of the German ring target when aiming at top of bull, unless there was a wind blowing. This was at 200 yards.

What would such a gun do on game?

Well, we have perfectly trustworthy records of what they did do.

For instance: Francis Parkman in his narrative of travel among the wild Indians in 1846 (a classic, by the way, and every word of it is true) is telling of their first meeting with the buffalo, on the Platte. His guide was a famous frontiersman, Henry Chatillon, from Carondelet (southern end of St. Louis—one of Chatillon's sons was living there in my day). Henry at last saw two buffalo feeding

a mile and a half away, and he took after them with both Parkman's rifle and his own. Here is how Parkman tells it:

> "In a moment Henry was worming his way, lying flat on the ground, through grass and prickly-pears, towards his unsuspecting victims. . . . For a long time all was silent; I sat holding his horse, and wondering what he was about, when suddenly, in rapid succession, came the sharp reports of the two rifles, and the whole line of buffalo, quickening their pace into a clumsy trot, gradually disappeared over the ridge of the hill. Henry rose to his feet, and stood looking after them.
>
> "'You have missed them,' said I.
>
> "'Yes,' said Henry; 'Let us go.' He descended into the ravine, loaded the rifles, and mounted his horse.
>
> "We rode up the hill after the buffalo. The herd was out of sight when we reached the top, but lying on the grass, not far off, was one quite lifeless, and another violently struggling in the death agony.
>
> "'You see I miss him!' remarked Henry.
>
> "He had fired from a distance of more than a hundred and fifty yards, and both balls had passed through the lungs, the true mark in shooting buffalo."

Parkman himself, although a scholar, had been trained in woodcraft and rifle shooting from boyhood, and he was one of the best shots in the East. He carried on this trip a rifle weighing fifteen pounds that he prized as a superior weapon. He tells of killing an antelope with it at 204 paces. The title of this book is 'The Oregon Trail." It helped to inspire Hough's "Covered Wagon."

* * *

Restore Your Antique Firearms

By WILLIAM J. HAYES

I WAS invited to see a collection of firearms a while back, and was shown five pistols greatly prized by the owner for reasons of their rarity, etc. I could but congratulate him upon obtaining these specimens. Later I found he had possessed these five pistols a little over two years and they still were in the same condition as when he had received them.

The pistols were very rare and contained all the original parts excepting a few minor details. A few screws had been replaced with over-sized heads, and a number of cracks in the wood were extremely ugly looking, while one of the best pistols had a piece broken from the stock. The five pistols, due to these defects, had lost a considerable bit of their intrinsic and artistic value.

A few hours spent with a small number of tools and a little patience would have restored these pistols and would have added sufficient value to amply repay the owner for his trouble. The stocks could be repaired, the over-sized screwheads cut down or replaced and engraved to match their mates, and the entire piece gone over, not spoiling the old coloring of the walnut, but repaired to match both color and part.

I obtained a Spanish gold inlayed percussion pistol a few months ago from a friend and did not blame him, at the time, for casting it from his collection. It was in terrible shape, rusted black and the walnut stock was oil stained and otherwise damaged until the entire pistol was really fit for the junk heap. I offered to buy it "as is" but as he would not accept cash I at last made the trade for a box of cigars.

I took the pistol apart, having to drill off three of the screw-heads in order to detach the metal parts from the wood. Then the real work began, for the rust was so bad that on most of the parts a file had to be used, but with care in order to save the engraving on the metal parts. I scraped and smoothed the walnut stock, glued up some ten cracks and loose pieces, carved, fitted and glued a piece of walnut to replace a piece broken from the stock, used a walnut wood stain finishing with an oil rub, polished the metal parts, made and engraved screws and now have a specimen of a Spanish presentation pistol which Sr. Don Sebastian Allerde, for whom it was made in 1846, would gladly add to his collection if he had one.

We all want good specimens of our particular line of collecting but there are very few collectors who do not obtain some rare or collectable guns or pistols in bad shape, and I am afraid add them to their collection in the condition they are in. We all can spare some of our time if it is only a few hours in the evening, and I am sure that if a collector once starts to restore his specimens he will continue doing so, for I personally know the considerable amount of knowledge I have obtained from having to figure out what was needed to repair the mechanism of a lock.

If some of you collectors take down from the wall, or from your cabinets, a number of your pieces which could be restored,—and regardless of the shape they are in they all can be repaired—work on them, replacing missing parts and coloring patched wood to tone to the age of the stock, in the end you will know your collection much better than you now do, and will find the time spent a pleasure. You do not have to be a gunsmith to restore antique firearms. All you need to do is to just go ahead with a few tools and the restored specimens may be the prize of your collection.

* * *

The Hines Sale

ANY young firearms collector would have been well repaid by attending the Hines' sale at the Walpole Galleries April 11. Some new high record prices for ultra-rare specimens were set; but the number of fair to good examples which were knocked down at a fraction of their value far exceeded those which brought the limit, and there was a chance for everybody to add desirable pieces to his collection at less of a financial outlay than usual.

The sale of the first section of the Hines collection made firearms collecting history. During the past year or so the big firearms sales have brought out comparatively few important pieces and as a consequence were attended largely by dealers only with the result that no startling prices and but little spirited bidding marked their progress.

But with such a collection as that of Mr. Hines as bait, all of the outstanding figures among weapon collectors and dealers in the East turned out to take advantage of good picknigs.

The sale was held in two sessions, morning and afternoon, at the Walpole Galleries. Among those present were such well known collectors and dealers as Harmer, Healy, Lawrence, Kindig, Fuller, Smiley, Barker, Sedgley, Graham, Wakefield, Kramer, Huntley, Carpenter, Lincoln, Frederick, Valentine, North and Redfield. There were an unusual number of bids by mail and made things quite lively. As usual some of the pieces which were looked upon as going to go very high went for far below their original cost. Yet to even things up some of the pieces fetched good prices, the Harpers Ferry 1807 bringing one hundred and ten dollars, which is a new high record for this model. H. B. Harmer, Major Smiley, Mr. Sumner Healy and Mr. Frederick were all big buyers. We would like to quote prices on some of the pieces sold but will do so only in a general way as it would be hardly fair to some of the dealers to publish what they paid.

The beautiful India gold inlaid shield went for $7.50, far below its value. The German body armor $7.00. Yet a small powder flask went a moment later for $23.00.

The splendid Joe Manton gun went for less than a third of its value. The double gun by Nock brought $90.00. The Kentuckies went for around $40.00. The splendid Spanish Miguelet shotgun only brought $46.00.

A very fine ivory inlaid wheel-lock rifle went for $110.00—very much below its worth, yet soon after a Colt revolver with pearl grips sold for $115.00. A fine Colt Patterson went for $135.00, and a Colt dragoon for $55.00. One of the show pistols of the collection, a beautiful hand chiseled and gold ornamented flintlock, went for $50.00. Yet another pistol which was only a multi-barrelled affair with no beauty sold for $140.00 on account of its rarity. A couple of pepperboxes went for $50 and $55 and six powder horns went for $205.00, running from $25 to $55 each. A pair of duelling pistols in case brought $100.00, and a wheel-lock pistol $110. One of the small cannon models went for $75.00, and another for $30.00 There was material to satisfy all kinds of tastes as the collection was a general one of exceptional quality, so altogether the sale was a success—not a financial one for the owner by a long shot, but Brother Hines brought a lot of gun bugs together and they all had a good time and some of us learned a lot. There were numbers of pistols that sold for $1.00, and many good ones went very cheap, so you prospective buyers at the next sale get busy and don't be frightened by the few pieces that sold for real money. You never can tell what a piece will bring, it just may happen that an extremely desirable one may not happen to strike the fancy of anyone or it may be overlooked, as in a large sale the bidders hardly get there to go over the stuff carefully, and as in some cases in this sale fine things went for far below their real value. We are of course speaking for out of town customers and not that bunch of sharks that are mentioned as being present, they won't even see this article—and they all know the game from a to z.

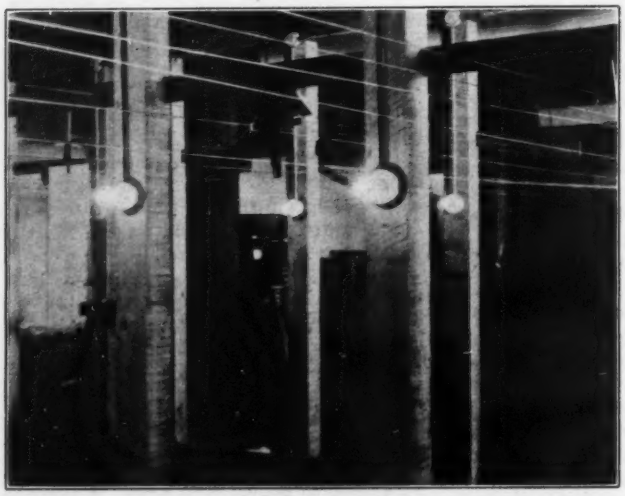
The next sale will be early in May. Send for your catalogues now and plan to be there.

Hot Dog Yet Once Again

By C. C. Finn

TWO hot dogs in one Winter is sure going some, but then, this is a great and glorious country, that is the Pacific Northwest—THE NATION'S SUMMER PLAYGROUND--is. Promised the Chamber of Commerce to work in that phrase—pretty neat.

This one I invented, partly. That is I invented one which would have worked just as well, cost a lot more money to make and repair and would have been more or less in the way, but I insisted so hard that the new N. G. W. Armory range *must* be equipped with sway-stoppers that I forced Capt. Fred Berger to put his brain in high gear and invent something, and so he did and here it is.

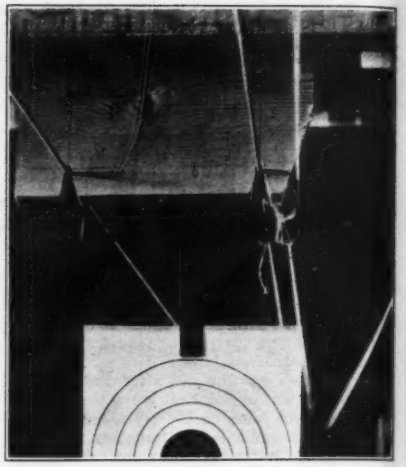


Interior details of new range showing lights and swaystoppers for the 50-foot distance.

Watinell is a sway-stopper? Fair enough, we'll try to tell you. On our brand-new range the targets slide along wires, propelled by cords which in turn are actuated by hand wheels, thus permitting a target to be brought back from the butts to the firing point to make sure that that last wobble produced a four, damit it did, get back there. Well these wires are eighty feet from end to end, and even the brick armory building has some tremble and sway, anyway the wires waggled like a puppy dog's tail and wouldn't stand still. Now, if you will look carefully at Exhibit 1 you see a bit of board notched to fit over the wires. The hinges allow this board to move back or front and thus get out of the way of the target carrier but the board falls back by gravity and just naturally prevents the wires from swaying. The picture took a minute or more exposure and men were moving about, working on the range, all the time. Guess if there had been any tremble the target would have had some fuzz. At the University armory range, designed by Major Bill Frazer, the wires are stopped by means of two two by fours operated by ropes and dropped on top of the wires, and this works pretty well except that the whole two by four has some end play and, of course, if the two by four is down over half of the targets this restricts firing on that half to fifty feet, and if one starts his target with sufficient energy in the wrong direction he can shake up three more targets. Outside that any weight on the wires tends to stretch or bend them and the two by four falling on the wires makes a grand, hollow boom which even I can't resist the temptation to help along by kind of wiggling the two by four. This rig (our new one) is strictly individual, each shooter can do most anything he wants to and not be able to disturb either neighbor.

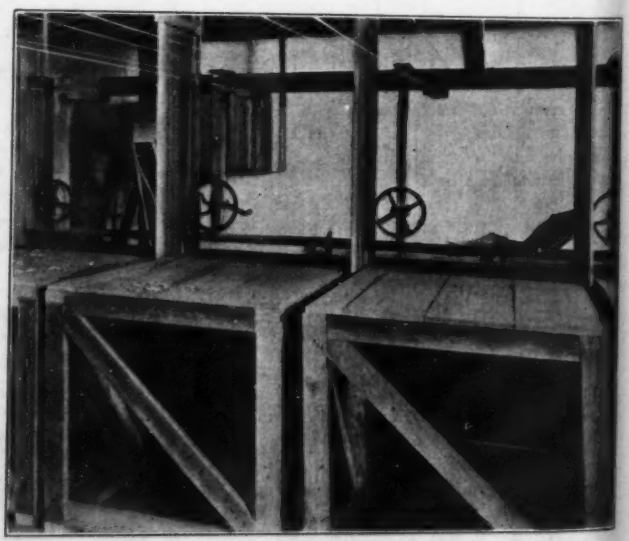
Next reel is a view of the 50- and 60-foot target positions and shows the battery of sway-stoppers, one on the 50-foot posts, one on the 60-foot posts, and as the wires are attached four feet back of the 75-foot posts the wire from 50 to 75 feet is held in three places. The worst acting target comes to rest (and we mean rest) in thirty seconds, the best one in ten seconds. Might mention again that these pictures were taken whilst the construction crew was on the job and that the range was nicely swept up before the General inspected and accepted it this morning.

Reel three is the back of the firing point showing the wide prone benches which are pushed out on the other side when wanted. Also the ample width of firing point, 40 inches per point allowing room on the shelf for the shooting bag, etc. Also the direct line carrier ropes are shown. The lead pulleys are sash type with two-inch shieves, so there is little tendency for the ropes to jump the pulleys, likewise the pulleys are in plain sight so the rope can be replaced if it does act up. The carrier ropes pass through a well-pulley at the butt's end; this is a swiveled and shrouded pulley with a three-inch shieve and they work very easily, likewise the groove is deep enough so the ropes do not jump out. Pulleys are anchored to a ring bolt and nut, and a pulley can be replaced very easily if shot down. The wires on which the carriers slide are of the hardest spring steel. Turnbuckles for tightening are at the butt's end and are all hooked into rings so they can be instantly taken down if a wire has to be replaced.



Details of "swaystopper"

Well, guess that's about all about the new range. I shot the very first shot and lucked in with a ten and had everyone present sign the target as witnesses. No, I didn't fire any more shots on that target, didn't have to as it was already a possible. The Club had heard vague rumors that a new range might be built, they shot on the old one last week, so I just made a lot of artistic arrows on the walls leading from the old range to the new one and everyone found his way thither without difficulty. Might add that we shot a bum score in the U. S. R. A. Match 10 but that was, of course, on account of the strange range, lights, excitement when the photographer took his flashlight and maybe a little, a LITTLE I said, naturally bum shooting.



Back of firing point showing prone benches and straightline drive operating cord. Note that benches slide forward into firing space when not in use giving maximum of room at firing points.

THE NRA NEWS

Conducted by C. B. Lister

TUNING UP THE INDOOR RANGE

A great many clubs can testify that there is considerable difference between *installing* a rifle gallery complete with target carriers and making the rifle gallery *work* in satisfactory manner. Wabbly targets, poorly lighted targets, unsteady shooting platforms are a few of the difficulties encountered on the first installation.

The story on the opposite page from C. C. Finn contains a great many ideas that should prove of assistance, not only to new clubs putting in their ranges for the first time, but to organized clubs who have had gallery difficulties. The details of the "sway-stopper" are very clearly shown, the method of installing the lights needs no explanation further than the picture, while the view of the firing benches shows the care which was taken to make the benches heavy and rigid enough to eliminate wabbling. The cut shows these benches flat on the floor without rollers. Whether or not this was due to the fact that the benches had not been completed is not known but while rollers add to the ease with which the benches may be moved back and forth they also add a factor of unsteadiness which is absolutely unavoidable, and in view of the care which has been taken with the other details in this new layout of Finn's, it is to be expected that the firing benches are to be left flat on the floor without casters. They may require a little more energy to slide in and out but they save many times that amount of energy in explosive expletives on the part of the shooters.

Notice particularly that the benches for use in firing prone and kneeling slide forward under the barricade out into the range space when not in use. In a majority of ranges the reverse is the case and the benches are shoved back of the firing point, occupying the most valuable space available. It would well repay clubs who have this old type of range to cut out the lower portion of their firing barricade in order to shove their benches out of the way when not in use.

Notice also that each individual firing point is barricaded up on the sides, extending about two feet into the range. This is a msot valuable safety precaution, particularly where hand guns are used as it helps obviate the danger of a weapon being swung around to the side or rear while firing. The wide shelf at each firing point is also a decided advantage to shooters.

It would undoubtedly repay many club secretaries to drop a line to the Seattle Rifle and Revolver Club, inquiring if they have any other installation stunts up their sleeve.

Chew this hot dog of Finn's very carefully, digest it thoroughly. It contains much meat in its wrinkled covering.

Seattle Rifle and Revolver Club using their new range for the first time and putting on a bum score in the U. S. R. A. Match

MORE NOTICE FOR THE RIFLE SHOOTING GAME

Three sporting magazines of national distribution outside of the hunting type of publications have definitely established rifle shooting sections in their publications or have adopted an editorial policy favorable to the game. They are *Sporting Life*, *Sport*, and *The National Athlete*. The latter publication, formerly *Intercollegiate Athletics*, is more particularly interested in the college and amateur athlete. The other two cover the entire national athletic field.

This information is passed along merely to let you know that the sport is gradually assuming the place in the eyes of the public which it should hold. Incidentally, if these publications are to be kept supplied wtih live items, it will be essential for the rifle clubs and State associations to tie up more closely than ever with this office in forwarding all the material of interest, photographs and news items, which they can get their hands on.

* * *

CAP MAKES A DICOVERY

In connection with the team match at Perry this year between the East and the West, Messrs. Hanson, Wolkyns, Payne, et al of the Western team will please take notice that they are to be sure and bring the trophy to Perry with them, as it is to remain henceforth with the Eastern team.

Cap. Richard, in his scouting around, has discovered a nut who claims to be able to pick out the squib loads from any and all makes of cartridges. Cap. promptly engaged his services as official "squib detector" for the East team, consequently there will be no more of those disastrous bank shots as experienced in last year's argument.

* * *

COLUMBUS, GEORGIA, GOES BARNSTORMING

The Columbus, Georgia, Rifle Club Team made a trip to Auburn, Alabama early this month and paid a visit to the student riflemen at Auburn College. When the smoke had cleared away, the Columbus outfit had a team total of 3465 against a team total of 3431 for the college riflemen. The match was a four-position affair at fifty feet, teams of ten, all scores to count for record. As a general rule, the colleges in the South have been backward in the matter of taking advantage of their own talent and splendid weather facilites for boosting the rifle shooting game. We hope that Columbus will continue the work with the men at Auburn College and that the other civilian clubs throughout the South will adopt the same tactics.

* * *

HANKOW RIFLE ASSOCIATION ORGANIZED IN CHINA

On January 21, 1924, the Hankow Rifle Association was organized at Hankow, China, and a copy of the constitution and by-laws nicely printed and bound, has been received. According to the constitution, the association has for its primary object the promotion of rifle shooting. It will be governed by a committee of seven members, which will include one member of at least three different volunteer companies, and a

representative of each foreign Navy in the port will be entitled to attend the meeting of the committee and to vote on all questions except the election of members. Monthly competitions and prize meetings are to be held, and matches will be arranged, open to members of the association and to all comers. The National Rifle Association of America rules are to govern all competitions.

There is something of business as well as pleasure in connection with these Anglo-European rifle associations organized at the ports in China. It is to be expected, however, that there will be some keen rivalry and a great deal of friendly competition of international nature between the teams which will gather together from the various legations and visiting ships in Hankow.

Our best wishes for a successful organization are extended to these riflemen in the Orient.

* * *

NEW HAVEN CITY CHAMPIONSHIP

Quinnipiac, runner-up in the National Interclub Gallery Championship, and Yale fought it out in New Haven the other day for the city championship. Quinnipiac came out on top, 1897 to 1858. The civilians registered a team possible in the prone position, and turned in a 452 offhand. The college riflemen trimmed the civilians in the sitting and kneeling positions. Yale's performance in the sitting position was excellent, the low man of the five shooting turning in a ninety-six.

* * *

OUTDOOR PROGRAMS FOR CLUB MEMBERS

The Spring Outdoor Program has been distributed to all individual members and club secretaries. This program is broader in scope and more generous in regulations governing specified dates for firing matches than any schedule that has ever been issued by the National Rifle Association. It makes ample provision for the novice and for the man who likes shooting more nearly simulating hunting conditions, as well as providing the usual championship events for the match rifles. This program should be in the hands of every club member, and a sufficient quantity is available for such distribution. Club secretaries should immediately get in touch with headquarters, advising how many copies of the program they will need for distribution to club members and the sportsmen of their community through local sporting goods dealers. The program offers a splendid opportunity to stimulate interest in the club's activities if it is properly taken advantage of and well distributed.

* * *

SEATTLE ON THE JOB, AS USUAL

Following the stunt pulled by the University of Washington girls in winning the Intercollegiate Championship, and, smelling an Ethiopian in the wood-pile, we got in touch with C. C. Finn of the Seattle Slub to inquire how come. The following reply contains food for much thought on the part of every club secretary situated in a college town. In the majority of instances college riflemen are actually suffering from lack of experienced small bore coaches, and in many, many cases there are supposedly active rifle clubs functioning right at the college's back door. The college shooters are a fine bunch to know, and if the civilian club is to do its full part toward promoting interest in rifle practice in the United States, it will have to follow the lead of Seattle and get acquainted with the undergraduates.

"Have yours of March 26th. This club takes ALL the credit for the University girls' remarkable showing, and then, alas, on the other hand, we can't take any credit at all.

"To begin with, Major Bill Frazer was, beyond any question, a member of this club, and likewise military instructor at the University of Washington. He taught military tactics, shooting, and "hold 'em and squeeze 'em" to the boys. But when the girls wanted to learn to shoot, the Major turned them over to Captain W. A. Hale, whether because he was busy or on account of the "hold 'em and squeeze 'em" part of the program deponent saith not,—sufficient that the Major is both modest and married. Captain Hale, on being interviewed this very morning, says that he learned to coach rifle teams entirely from Bill Frazer; but there is a Bible quotation somewhere to the general effect that when a plant grows pretty well it is as much a compliment to the soil as to the geezer who planted the plant. So it seems likely that Bill Frazer was a good teacher and Captain Hale a good learner, and thus the rifle lore filtered as far as the girls.

"The club's share in this is obscure, we *HAVE* helped where we could. We licked the boy's team once and good, and they made up for it the next year. It is possible that Frazer learned something to his advantage from watching us shoot, likely learned several things which he could tell others NOT to do, anyway; but I guess we can only state that our mere existence has served to show the kids what can be done."

* * *

SPANG-CHALFANT STILL HARD AT IT

With the number of exceptionally active industrial rifle clubs that are functioning from New England to California, it is impossible to say that any one organization is outstanding in its activities. However, the Spang-Chalfant Club, of Erie, Pennsylvania, certainly keeps its head well above water, and in every issue of *The Welder*, an attractive family publication of Spang-Chalfant & Co., the rifle club manages to fill at least a page with its activities. The plan followed by this club is to sponsor team matches, more team matches, most team matches. Steam Station A shoots a match with the Foremen's Club, then with the Pipe Mills, then with the Electric Shop; then the whole club journeys to some church in town and shoots a match with the live wires in the church organization, or maybe they climb into automobiles and go to some nearby community for a match, but always it is the team work, and company and departmental morale is surely well worth while not only to the club members, but to the company managers. It is a scheme that can well be followed in any industrial organization.

* * *

HIGHLAND PARK, DETROIT, MICHIGAN, FORGING INTO THE LIMELIGHT

According to Mr. John T. French, Secretary of the Highland Park Rifle and Revolver Club, that organization at its meeting on April 6th took in seventy-three new members, bringing their total membership up to 175 in good standing, with over 200 expected by the time this appears in print, as a result of the shoot held at the Naval Reserve Armory on the tenth, and banquet was a feast not only from the epicurean standpoint, but for the ears and eyes as well, as some of the most prominent men in that section of Michigan addressed the riflemen, and a sparkling entertainment was provided in addition. This tendency on the part of rifle clubs to function as clubs and social fraternities instead of quasi-governmental organizations depending in an uncertain sort of way on an unseen and only half understood "War Department" in Washington to furnish them with their life blood, is the most outstanding and most healthy indication of the improved plane on which the sport of rifle shooting has been placed in the past few years.

* * *

DEFEAT ARTILLERYMEN

Five members of the Delaware and Hudson police department on Thursday afternoon, February 28, met a similar team representing the 104th Field Artillery on their pistol range in Binghampton for a previously arranged match. When the smoke had cleared away, our officers had a score of 714 points as against 640 scored by the militia men. Fully 500 spectators, it is estimated, witnessed the shoot, the scores of which follow:

POLICE

	10 shots at 15 yds.	5 shots at 25 yds.
Chief J. K. Jensen	100	46
Captain O. B. Abel	97	46
Captain J. R. Johler	97	47
Lieutenant James Fox	99	48
Patrolman M. Nelson	94	44
Totals	487	227

ARTILLERYMEN

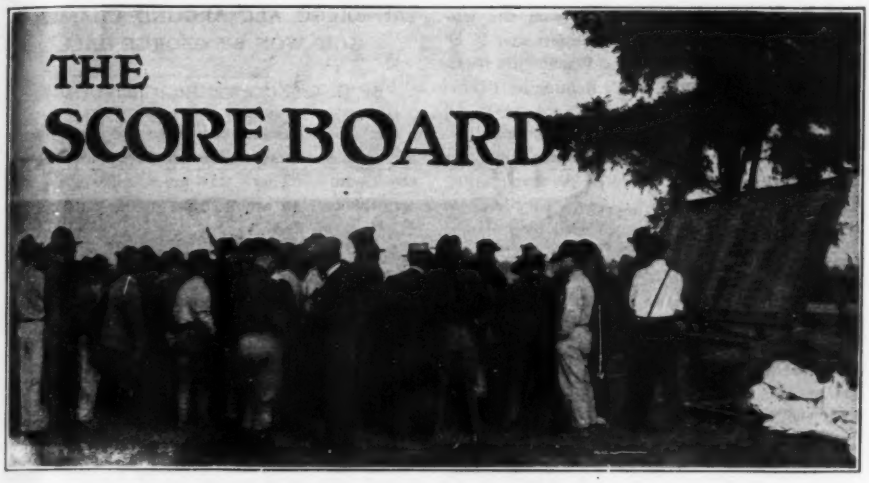
	10 shots at 15 yds.	5 shots at 25 yds.
Brown	99	47
Allen	91	46
Janne	86	41
Sinnock	90	39
Marin	84	21
Totals	450	190

* * *

THE MARINES CAN HELP YOU

Although the material appearing in THE AMERICAN may appear to have little conncetion with the matters of a military correspondence school, still it is thought that the readers of this magazine may be interested in learning something of the Marine Corps Institute, a correspondence school maintained by the Marine Corps and open to every officer and enlisted man in that branch of the Service. The Institute offers almost every course which can be obtained from the most well-known correspondence schools in this country, and it numbers on its enrollment lists over one-third of the officers and men in the Marine Corps. In this way not only has the Marine Corps raised its already high standard of efficiency, but it has enabled its members who return to civilian life to obtain profitable employment which they would not otherwise have.

The Institute would welcome inquiries from the readers of THE AMERICAN RIFLEMAN who might be interested in learning more about this organization.



The Big Championships

IT is doubtful if there has ever been a series of interclub matches in the history of the N. R. A. Gallery Competitions that have been as closely contested as the Gallery Interclub Matches this season. The big event of the year is of course the Civilian Interclub Championship at 75 feet. Seventy-eight teams faced the barrier in this event, and when the smoke had cleared away, there were but sixteen points separating the seven high teams. Those ancient rivals, Remington and Quinnipiac, were at it, hammer and tongs, throughout the six stages, with West Bend, Roberts Island of Stockton, California, Peerless of Cleveland, Sheridan, Wyoming, and McCook Field, Ohio, always in the running. Quinnipiac took the lead the first week dropping twelve points as compared with Remington's eighteen points. The Quinnipiac outfit registered a team possible in the prone position in this stage. The second week Remington came back, dropping but twenty-six points in the prone and kneeling stages, while Quinnipiac lost thirty-five. Quinnpiac turned the tables again in the final stage, dropping thirty-seven points prone and standing, while the Red Ball outfit lost forty, so that the net outcome left Frank Kahr's colleagues one point to the good with a team total of 1916 against Quinnipiac's 2915 and West Bend's 1910. The detail scores are included in the tabulation below.

The Civilian Interclub Match at 50 feet represents just as keen rivalry between some of the most active of the N. R. A. Clubs as does the older competition at the longer range. Although the field was considerably smaller the 50 ft. championship was won by the Columbus Business Men's Rifle Club with a total of 2906, which gave them a comfortable margin over the Massillon, Ohio rifle club with a total of 2859. Massillon trailed Columbus very closely until the standing stage was reached, when one Massillon gun toter, after registering a possible in the prone position, dropped out for fifty-nine standing, and another who, up until that time, had dropped but eleven points throughout the entire match turned in a seventy-nine standing. Johnstown, Pa., finished third with 2833. Curtis Liston, shooting with this outfit, incidentally made high individual score of the match with a 592 for the entire course.

The Intercollegiate title changed hands for the third consecutive year, going to George Washington University, with a team total of 2919. Georgetown, which took the match last year, was faced with the necessity of building a new team organization this season and finished in fifth place. Modesto Junior College Rifle Team, of Modesto, California ran close behind George Washington with a team total of 2914, while Norwich University finished only nine points behind the winners and took the third set of medals. Walter Stokes, shooting on the George Washington team, turned in the high individual score of the Interclub series with a total of 5994. Twenty-seven teams representing twenty of the major colleges and universities of the country competed in this event and gave ample evidence of the firm footing which the rifle shooting game has attained in intercollegiate circles.

The Women's Intercollegiate Championship, a match added to the program this year, was won by the University of Washington Girls' Team with a team total of 2738. George Washington University Girls finished second with 2662, and the University of Maryland third with 2375. Conditions of this match called for ten shooters each week, five high scores to count. The showing of the University of Washington Minervas came as a distinct surprise to everyone except the shooting clan in their locality. The hand of one C. C. Finn, an obscure civilian shooter in that neck of the woods, of Major William Frazer, military instructor at the University of Washington, and Captain W. A. Hale, who had immediate charge of the girls' shooting, are to be plainly seen in the results of this competition.

The High School Championship witnessed another upset in the dope when Modesto Junior High School came through with a team total of 2922, thereby annexing the title from the heads of Iowa City High School, 2918, and Central High School of Washington, 2908. Modesto turned the trick by a team possible in the prone position the second week, an accomplishment which lately has generally been reserved for the Central High School lads.

The Military School Championship was won by St. Johns Military Academy at Delafield, Wisconsin with a score of 2902, one hundred and forty-two points better than Culver Military Academy, last year's champions. Culver finished second with 2780, and New York Military Academy third, with 2706. A tabulation of all scores is given below.

RESULTS OF MATCH NO. 19, CIVILIAN INTERCLUB CHAMPIONSHIP 50 FEET

Place	Name	Address	Score
1.	Columbus Bus. Men's R. C.	Col'bus, O.	2906
2.	Massillon R. C.	Massillon, O.	2859
3.	Johnstown R. C.	Johnstown, Pa.	2833
4.	Janesville R. C. No. 1	Janesville, Wisc.	2832
5.	Cromwell R. C. No. 1	Cromwell, Conn.	2819
6.	Columbus R. C.	Columbus, O.	2815
7.	McCook Field R. C.	Dayton, Ohio	2900
8.	Janesville R. C. No. 2	Janesville, Wisc.	2786
9.	Cromwell R. C. No. 1	Cromwell, Conn.	2772
10.	New Brit. R. C. No. 1	New Brit., Conn.	2754
11.	S. Manchester R. C.	S. M'ch'er, Conn.	2745
12.	Louisville Nat. R. C.	Louisville, Ken.	2707
13.	Monitor R. C.	Monitor, Oreg.	2685
14.	Bayonne R. C.	Bayonne, N. J.	2625
15.	Corbin-Russwin R. C.	N. Brit., Conn.	2617
16.	Superior R. C.	Calumet, Mich.	2502
17.	N. Brit. R. C. N. 2.	New Brit. Conn.	2489
18.	Yellowstone R. C.	Billings, Mont.	2412
19.	Afton R. C.	Afton, Wyo.	2412

RESULTS OF MATCH NO. 20, CIVILIAN INTERCLUB CHAMPIONSHIP 75 FEET

Place	Name	Address	Score
1.	Remington Arms C.	Bridgeport, Conn.	2916
2.	Quinnipiac R. & R. C.	N. Haven, Conn.	2915
3.	West Bend R. C.	West Bend, Iowa	2910
4.	Robert's Isle. R. C.	Stockton, Cal.	2910
5.	Peerless R. & R. C.	Cleveland, O.	2907
6.	Sheridan R. C.	Sheridan, Wyo.	2904
7.	McCook Field R. C.	Dayton, Ohio	2900
8.	Pasadena R. & R. C.	Pasadena, Cal.	2891
9.	National Cap. R. C. No. 1	Wash. D. C.	2879
10.	Deerfield Gun C.	King's Mills, O.	2878
11.	Centennial R. C.	Chicago, Ill.	2869
12.	Ames Faculty R. C.	Ames, Iowa	2868
13.	Ridgeville R. C.	Evanston, Ill.	2868
14.	Manhattan R. & R. Assn.	N. Y. City.	2867
15.	Bell Telephone Gun C. No. 1	Ch'go, Ill.	2864
16.	Worcester Pis. & R. C.	W'r's'ter, Mass.	2861
17.	Salt Lake R. & R. C.	Salt Lake C. Ut.	2858
18.	Portland R. C. No. 1	Portland, Oreg.	2852
19.	Mahwah R. C.	Mahwah, N. J.	2848
20.	Vancouver R. C.	Vancouver, Wash.	2845
21.	Brattleboro R. C. No. 1	Br'tleboro, Vt.	2843
22.	Robert's Isle. R. C. No. 2	Stockton, Cal.	2840
23.	Brooklyn R. C., No. 1	Brooklyn, N. Y.	2835
24.	Rumford R. C.	Mexico, Me.	2831
25.	Hamilton C. Snipers No. 1	Chi'go, Ill.	2829
26.	Green Mountain R. C.	Rutland, Vt.	2821
27.	Bellingham R. & R. C. No. 1, Bellingham Washington		2817
28.	McCook Field R. C. No. 2	Dayton, O.	2816
29.	Claremont R. C. No. 1	Clarem't, N. H.	2815
30.	Franklin R. C. No. 1	Franklin, Pa.	2815
31.	Perth Amboy R.C. No.1	P. A'b'y, N. Y.	2813
32.	Tulsa R. C.	Tulsa, Okla.	2811
33.	Bridgeport R. C. Inc.	Bridgep't, Conn.	2810
34.	Hawthorn R. C. No. 1	Chicago, Ill.	2809
35.	Mound City R. C.	Webster Groves, Mo.	2808
36.	Lakewood R. & R. C.	Lakewood, O.	2805
37.	Seattle R. & R. C.	Seattle, Wash.	2803
38.	Hawthorn R. C. No. 2	Chicago, Ill.	2799
39.	Minneapolis R. C.	Minneapolis, Minn.	2794
40.	Bangor Maine R. Assn.	Bangor, Me.	2793
41.	Auburn N. Y. R. C.	Auburn, N. Y.	2789
42.	Ashland R. & Pis. C.	Ashland, O.	2787
43.	Columbus Ga. R. C. No. 2	Col'bus, Ga.	2781
44.	Qu'nipiac R.&R. C. No.2	N. Ha'n, Con.	2779
45.	Wilmington R. C.	Wilmington, O.	2772
46.	Brattleboro R. C. No. 2	Brat'boro, Vt.	2768
47.	Case Eagle R. C.	Racine, Wisc.	2767
48.	Warren R. & R. C.	Warren, Pa.	2758
49.	Portland R. C. No. 2	Portland, Oreg.	2757
50.	Rem'ton Arms C. No. 2	Br'gep't, Conn.	2755
51.	Miami R. C.	Cincinnati, O.	2754
52.	Bell Tel. Gun C. No. 2	Chicago, Ill.	2753
53.	Vancouver R. C. No. 2	V'nc'v'r, Wash.	2748
54.	Ridgewood R. C.	Ridgewood, N. J.	2739
55.	Hamilton C. Snipers No. 2	Chicago, Ill.	2736
56.	Irving Park R. C.	Chicago, Ill.	2722
57.	Claremont R. C. No. 2	Clarem't, N. H.	2718
58.	Studebaker R. C. No. 1	Detroit, Mich.	2706
59.	Mansfield R. C.	Mansfield, O.	2705
60.	Columbus Ga. R. C. No. 1	Col'b's, Ga.	2700
61.	Sandusky R. & Pis. C.	Sandusky, O.	2677
62.	Seattle R. & R. C. No. 2	Seattle, Wash.	2671
63.	Perth Amboy R. C. No. 2	P' A'y, N. J.	2661
64.	Claremont R. C. No. 3	Claremont, N.H.	2658
65.	McCook Field R. C. No. 3	Dayton, O.	2652
66.	Hawthorn R. C. No. 3	Chicago, Ill.	2617
67.	Brooklyn R. C. No. 2	Brooklyn, N. Y.	2616
68.	Studeb'r R.&R.C. No.3	Detroit, Mich.	2589
69.	Studeb'r R.&R.C. No.2	Detroit, Mich.	2569
70.	Yawadanac R. & R. C.	Dunkirk, N. Y.	2551
71.	San Francisco Tel. R.C.	S. Fr'n'co, Cal.	2545
72.	Palmetto R. C.	Jacksonville, Fla.	2379
73.	Rochester R. C.	Rochester, N. Y.	2224

NOT COMPLETED

Bellingham R. & R. Club, Bellingham, Wash.
Jacksonville R. Club No. 1, Jacksonville, Fla.
Jacksonville R. Club No. 2, Jacksonville, Fla.

NOT REPORTED

National Capitol R. Club No. 2, Wash. D. C.
Birmingham Athletic R. C., Birmingham, Ala.

RESULTS OF MATCH No. 21, INTERCOLLEGIATE TEAM CHAMPIONSHIP

Place	Name	Address	Score
1.	George Wash. Un, No. 2,	Wash. D. C.	2919
2.	Modesto Jr. College,	Modesto, Cal.	2914
3.	Norwich University,	Northfield, Vt.	2910
4.	Columbia Univ.,	N. Y. C.	2889
5.	Georgetown University,	Wash., D. C.	2888
6.	George Wash. Un. No. 1,	Wash., D. C.	2884
7.	Mass. Inst. Tech.,	Cambridge, Mass.	2876
8.	State Un. of Iowa,	Iowa City, Iowa	2871
9.	University of Penna.,	Philadelphia, Pa.	2870
10.	University of Wash.,	Seattle, Wash.	2869
11.	Iowa State College,	Ames, Iowa	2858
12.	C. C. N. Y.,	New York, N. Y.	2842
13.	University of Chicago,	Chicago, Ill.	2836
14.	Drexel Institute,	Philadelphia, Pa.	2835
15.	Georgetown Un. No. 2,	Wash., D. C.	2832
16.	Yale University,	New Haven, Conn.	2818
17.	Syracuse University,	Syracuse, N. Y.	2812
18.	Modesto Jr. Col. No. 2,	Modesto, Cal.	2804
19.	Columbia University,	New York City,	2800
20.	John Hopkins Un. No. 1,	Baltimore, Md.	2794
21.	Northwestern Un.,	Evanston, Ill.	2782
22.	Mass. Inst. Tech. No.2,	Cambd'ge, Mass	2742
23.	John Hopkins Un. No. 2,	Baltim'e, Md.	2733
24.	Carnegie Inst. of Tech.,	Pittsburgh, Pa.	2714
25.	Northwestern Un. No. 2,	Evanston, Ill.	2689
26.	Syracuse Un. No. 2,	Syracuse, N. Y.	2681
27.	Syracuse Un. Fresh.,	Syracuse, N. Y.	2657

RESULTS OF MATCH NO. 25, HIGH SCHOOL TEAM CHAMPIONSHIP

Place	Name	Address	Score
1.	Modesto H. S. R. C.,	Modesto, Cal.	2922
2.	Iowa City H. S. R. C.,	Iowa City, Iowa	2918
3.	Central H. S. R. C. No. 1,	Wash. D. C.	2908
4.	Waterloo H. S. R. C.,	Waterloo, Iowa	2862
5.	Lawrenceville S. R. C.,	Law'ce'le, N. J.	2848
6.	Pasadena H. S.,	Pasadena, Cal.	2846
7.	Central H. S. No. 2,	Wash., D. C.	2801
8.	Modesto H. S. No. 2,	Modesto, Cal.	2793
9.	Western H. S.,	Washington, D. C.	2790
10.	Grover Clevel'd H. S.,	St. Louis, Mo.	2778
11.	Central H. S. No. 2,	Washington, D. C.	2738
12.	Evanston Township H. S.,	Eva'ton, Ill.	2710
13.	Lawrenceville S. No. 2,	L'r'vi'e, N. J.	2708
14.	Ridgewood H. S.,	Ridgewood, N. J.	2663
15.	Lewis & Clark H. S.,	Spokane, Wash.	2420
16.	Riverside Poly. H. S.,	Riverside, Cal.	2386
17.	Baltimore Poly. Inst.,	Baltimore Md.	2214
18.	Richmond Hill H. S.,	Rich'd Hill, N. Y.	2167

RESULTS OF MATCH NO. 22, WOMEN'S INTERCOLLEGIATE CHAMPIONSHIP

Place	Name	Address	Score
	University of Washington,		2738
	George Washington University		2662
	University of Maryland		2375

RESULTS OF MATCH NO. 25, MILITARY SCHOOL TEAM CHAMPIONSHIP

Place	Name	Address	Score
	St. John's Military Academy,	Delafield	2902
	Culver Military Academy,	Culver, Ind.	2780
	New York Mil. A.,	Cornwall-on-Hud., N. Y.	2706
	St. John's School R. Club,	Manlius, N. Y.	2693
	St. John's College R. C.,	Washington, D. C.	2542
	Bordentown Mil. Inst.,	Bordentown, N. J.	2320
	Northwestern Military and Naval Academy,	Walworth, Wisc.	Not Completed
	New York Military Academy, No. 2, Cornwall-on-Hudson,	N. Y.	Not Completed
	St. John's Military Aacdemy R. C. No. 2, Delafield,	Wisconsin	Not Reported

* * *

WHAT THEY USED

The Remington Club, in winning Match No. 20, used a combination of Remington barrels and Ballard-Martini actions, and Remington Palma ammunition, of course. Quinnipiac, as one would expect, used Model 52 Winchesters and Winchester Precision ammunition. West Bend used Peterson Ballards and Peters Tackhole ammunition.

The Columbus Business Men's Club, in Match No. 19, used Model 52 Winchesters with U. S. N.R.A. ammunition. The Massillon Club also used Model 52's with Peters Tackhole, while Johnstown used B. S. A.'s with Precision 75. Janesville Rifle Club, which finished close behind Johnstown, used Stevens 414's with U.S. N. R. A.

George Washington University, in winning the Intercollegiate Championship, used a Peterson-Ballard, a Model 1922 Springfield, and a Model 414 Stevens, shooting Remington-Palma throughout. Modesto Junior College used Savage 1919's with U. S. N. R. A. ammunition, and Norwich used B. S. A. No. 12's with U. S. N. R. A.

The University of Washington won the women's title with Model 52 Winchesters and U. S N. R. A. cartridges. George Washington Girls used Peterson-Ballard and Remington-Palma, while the University of Maryland fired the Model 1922 Springfield with U. S. N. R. A. ammunition.

The High School Championship was won with B. S. A. rifles and U. S. N. R. A. ammunition. There is no record of what Iowa City used in this match. Central High School used Model 22 Springfields and U. S. N. R. A. St. John's Military Academy failed to advise what tools they used in winning the Military School Championship. This information is being obtained and will be published in the next issue. Culver used Model 52 Winchesters with Precision 75 ammunition, and the N. Y. Military Academy used the same equipment.

It might be interesting to publish with the scores a complete list of what the various competitors used, but space does not permit it, and after it had all been put down in black and white, you would find tail-enders using the same equipment that the winners carried through with them to victory. The facts remain this year as they have in every year since the commercial companies really started to make good .22 caliber rifles and ammunition. It is the fortunate combination of a good man with the rifle that fits him and the ammunition that happens to work best in his particular gun who gets the maximum results.

* * *

OFFICIAL RESULTS NORTHEASTERN INTERCOLLEGIATE LEAGUE

Norwich University won the Northeastern Intercollegiate League pennant for this season with a clean slate through the entire schedule of nine matches. The standing of the ten colleges making up the membership of the league is given below.

This league plan of conducting rifle matches has apparently filled a long felt need by providing definite competitors who are familiar to the undergraduates as old rivals in other lines of sport. It is anticipated that next year there will be at least two more of these intercollegiate Leagues in operation. Backed by the National Intercollegiate Match which has been authorized for the service rifle, and by shoulder-to-shoulder competitions of the type held in New York City this year, these leagues will assure the placing of rifle shooting on a firm footing as a minor sport in intercollegiate circles. And be it remembered, it is from the high schools and colleges that the next generation of riflemen must come.

STANDING OF TEAMS

	Won	Lost	%
Norwich Univ., Northfield, Vt.	9	0	1.000
Univ. of Pa., Philadelphia	8	1	.889
Columbia Univ., N. Y. City	8	1	.889
Penn State Col., State Col., Pa.	6	3	.666
Mass. Institute Tech., Cambridge	4	5	.444
Syracuse Univ., Syrac., N. Y.	5	4	.555
Yale Univ., New Haven, Ct.	2	7	.222
Harvard U., Cambridge, Mass.	2	7	.222
Dartmouth Col., Hanover, N. H.	1	8	.111
Princeton U., Princeton, N. J.	0	9	.000

* * *

MATCH WANTED

Mr. M. M. Pond, of the Roosevelt Highway Rifle and Revolver Rifle Club, Whitefish, Montana, writes that his club desires to shoot a match with any rifle club in the United States. Number of shots: 3 standing, 3 sitting, 3 kneeling, and 6 prone. Distance: 75 feet, indoors. Any .22-caliber rifle; N. R. A. targets.

SAN DIEGO ALL AROUND CHAMPIONSHIP WON BY GEORGE HALL

By G. C. ZUCKWEILER, *Club Secretary*

San Diego has just completed one of the finest all around championship matches ever held in the County. There was much talk as to who was the best all around shot in the County, and I being the Secretary of one of the clubs, the San Diego Rifle & Revolver Club, was asked to get up a program, to invite all civilians and service men to compete, which I did. In all I received seventeen names wishing to enter, but on the day of the first contest only ten showed up and they were sure some shooters and a tough bunch to go up against, every man knew he had to make every shot count if he expected to win. Competing with such men as George Hall, winner of the all around championship at Camp Perry back in 1920; E. D. Myrick that won the National Revolver Championship in 1911; Walter Bellon who trimmed them all in the Southern California League in 1920, with the good old Springfield; Carl Schroder, shooter that won the revolver match in Southern California in 1919; Rex Drew carried off some high honors at Camp Perry; Dr. H. H. Taylor won the individual small bore championship of Southern California in 1920 and Top Sergeant Tillman one of Uncle Sam's best Marines, well known for his high scores at Camp Perry, so when I looked them over I knew that I had quality if I did fall flat chasing up quantity, and so the match was on and the program was as follows:

March 2nd, first contest 70 shots and 2 sighters, the regular army qualification course. This match was won by Sergeant Tillman of the Marines, making 225 out of a possible 250, with the U. S. Springfield.

March 9th, the .22-caliber rifle, 40 shots in all, 10 shots prone at 100 yards, 10 shots sitting at 100 yards, 10 shots offhand 50 yards and 10 shots rapid fire sitting at 50 yards. This match was won by E. D. Myrick, making 370 out of a possible 400 points.

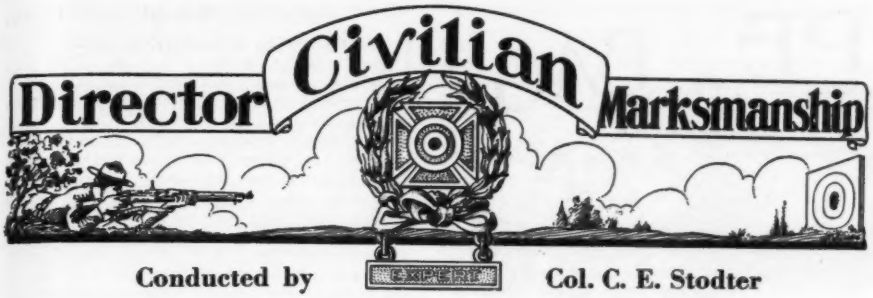
The .38 revolver was also shot on this date and won by George Hall. This was shot from the 25-yard range, 30 shots in all, 10 slow 10 times and 10 rapid fire, Hall made a score of 293 out of a possible 300.

March 23rd. The .45 automatic pistol match from the 25-yard range 30 shots in all slow time rapid. This match was won by O. W. Coyle, making 284 out of a possible 300 points. Mr. Coyle is a good shot with a pistol but he lays his good score to the Western Ammunition he was using. The fifth and last shot of the match was won by the champ of this match, George Hall, this being the shotgun contest 100 clay birds at the 16-yard line, Hall broke 92 out of a possible 100.

The scores are as follows:

Firearms—	30*	22†	38†	45†	SG§	Total
Geo. Hall	324	368	293	279	92	1356
E. D. Myrick	324	370	282	279	91	1346
Sgt. Tillman	325	359	272	281	83	1320
W. Bellon	316	365	281	273	84	1319
O. W. Coyle	300	341	276	284	68	1269
C. Schroder	318	359	281	254	18	1230
Dr. Taylor	312	350	271	271	..	1213
Rex Drew	296	353	278	275	..	1202
J. M. Asher	299	319	252	257	..	1127
T. M. Lamb	303	298	222	250	..	1068

* U. S. Springfield † Caliber § Shotgun



Conducted by Col. C. E. Stodter

AMMUNITION USED IN SHOOTING FOR QUALIFICATIONS

In firing the regular army courses for qualifications civilian riflemen may use any ammunition suitable for the rifles that they use. This includes the service ammunition as issued to the clubs, National Match ammunition, hand loaded or commercial ammunition. Rifle clubs that are not provided with a supply of record sheets for reporting qualifications should write to this office and the necessary forms will be sent them.

* * *

OLD CALIBER .22 AMMUNITION

Some of the caliber .22 ammunition that has been issued to rifle clubs is rather old and in some cases the lubricant is hardened to such an extent as to make the ammunition unsatisfactory. One of our members has reported that he has good success in using this ammunition by opening a box of cartridges and pouring over them a sufficient quantity of thin oil so that all of the cartridges are covered. This softens the lubricant so that the ammunition gives satisfactory results.

* * *

RUSSIAN RIFLES AND AMMUNITION

We have Russian rifles on hand at Raritan Arsenal, Metuchen, N. J. and at Rock Island, Ill. There are none at Benicia Arsenal, Benicia, Calif., at the present time, but a supply has been ordered from Manila and will probably arrive in about a month. All of the Russian ammunition is on hand at Benicia, Calif. It is reported as unserviceable due to a considerable percentage of misfires and hang fires, but no doubt some of it is in fairly good condition and the cases and bullets could be used for reloading.

* * *

COMPONENTS FOR RELOADING

The supply of components at Benicia Arsenal, reported in the February 15th issue of THE AMERICAN RIFLEMAN, has been exhausted. We still have primers for both the .30 and .45 caliber cartridges also service cartridge cases and Krag cartridge cases at Frankford Arsenal, Philadelphia. The price of the Krag cartridge cases is $10.00 per thousand, unprimed.

* * *

HEAVY BARREL RIFLES

All of the surplus National Match rifles that were made up last year have been disposed of. No more are available for sale. We do not contemplate having any of these rifles made up this year. Members who desire to procure one of these rifles can purchase the receiver, bolt, guard and attached parts through this office and can have the barrel fitted by the Griffin & Howe, Hoffman Arms Co., the Neidner Arms Corporation, or the Winchester Repeating Arms Co. Prices for this work will run from about $40.00 to $50.00.

* * *

SAVAGE BOLT ACTION RIFLE, CALIBER .22

All of the Savage bolt action rifles, Model 1919 now on hand are the new model with the improved bolt action. The price of these rifles to members of the National Rifle Association is $18.20, which includes packing charges. No more of the old models, which were formerly sold at $15.50 are on hand.

* * *

PRICE LIST OF U. S. RIFLE CALIBER .22 MODEL 1922

Rifle, U. S., Cal. .22, Model 1922 ..... $47.40

COMPONENTS

Band, lower	.61
Barrel, assembly	8.00
Composed of:— Barrel, (stripped) Stud, fixed Stud, fixed Pin, fixed stud	
Barrel, (stripped)	7.63
Base, magazine	.14
Bolt and Bolt Head, assembly	6.75
Composed of:— Bolt; Head, bolt; Latch, bolt head Pin, bolt head latch; Plunger, bolt head latch; Spring, bolt head latch plunger	
Bolt	3.29
Bushing, guard screw	.07
Catch, floor plate	.25
Ejector	.44
Extractor	.45
Follower, magazine	.78
Guard, trigger	3.25
Head, bolt	3.00
Head, firing pin	.21
Latch, bolt head	.16
Lock, bolt sleeve	.18
Lock, safety, assembly	.43
Composed of:— Piece, safety lock thumb; Plunger, safety lock; Sprindle, saftey lock; Spring, safety lock.	
Magazine, assembly	2.43
Composed of:— Base; Follower; Pin, base; Pin, follower thumb; Pin, long; Pin, short; Rib, front; Rib, rear; Side, left; Side, right; Spring.	
Mainspring	.03
Piece, cocking	.52
Piece, safety lock thumb	.33
Pin, bolt head latch	.06
Pin, bolt sleeve lock	.02
Pin, butt swivel	.01
Pin, firing, assembly	.81
Composed of:— Piece, cocking; Rod, firing pin.	
Pin, fixed stud	.01
Pin, floor plate catch	.01
Pin, front sight	.01
Pin, lower band	.01
Pin, magazine base	.02
Pin, magazine follower thumb	.07
Pin, magazine, long	.02
Pin, magazine, short	.02
Pin, sear	.02
Pin, trigger	.03
Plate, butt	.67
Plate, butt swivel	.23
Plate, floor	.86
Plunger, bolt head latch	.23
Plunger, ejector stop	.03
Plunger, safety lock	.03
Plunger, striker	.09
Receiver	7.31
Rib, magazine, front	.40
Rib, magazine, rear	.40
Rod, firing pin	.29
Screw, butt plate	.05
Screw, butt swivel	.02
Screw, ejector stop	.03
Screw, front sight	.02
Screw, guard, front	.03
Screw, guard, rear	.05
Screw, lower band	.02
Sear	.34
Side, magazine, left	.18
Side, magazine, right	.22
Sight, front	.05
Sight, receiver, Lyman, No. 48B	5.93
Sleeve, bolt, assembly	1.27
Composed of:— Sleeve, bolt; Lock, bolt sleeve; Pin, bolt sleeve lock; Spring, bolt sleeve lock.	
Sleeve, bolt	1.06
Sleeve, firing pin	.03
Sprindle, ejector stop	.06
Spindle, safety lock	.06
Spring, bolt head latch plunger	.01
Spring, bolt sleeve lock	.01
Spring, ejector stop	.01
Spring, floor plate catch	.01
Spring, magazne	.12
Spring, magazine retaining	.26
Spring, safety lock	.01
Spring, sear	.02
Spring, striker plunger	.02
Stock, assembly	4.32
Composed of:— Stock; Bushing, guard screw.	
Stock	4.25
Stop, ejector, assembly	.56
Composed of:— Stop, ejector; Plunger, ejector stop; Screw, ejector stop; Spring, ejector stop; Spindle, ejector stop.	
Stop, ejector	.43
Striker, assembly	.75
Composed of:— Sight, front; Pin, front sight; Stud, movable.	
Stud, fixed	.36
Stud, movable	.27
Swivel, butt assembly	.26
Composed of:— Swivel, butt; Pin, butt swivel; Plate, butt swivel.	
Swivel, butt	.02
Swivel, lower band	.19
Trigger	.32

The price of $47.40 for the .22 caliber rifle as quoted above does not apply to the rifles now on hand, which will be sold at the price of $40.96, including packing charges, until the supply is exhausted.

* * *

1924 NATIONAL MATCH AMMUNITION

Ammunition for the National Matches for 1924 is now available for sale at the following prices:

Cal. .30, Model 1906 with 170 grain 9° boat tail bullet with gilding metal jacket, per case of 1200	$73.63
Per bandolier of 60 rounds	3.68
Cal. .45 for Automatic pistol, per case of 2000 rounds	75.52
Bullets, 170-grain, gilding metal jacket, 9° boat tail, per thousand	14.16

We still have a supply of 1923, .30 caliber 19096 National Match ammunition for sale at $3.00 per bandolier or $60.00 per case.

* * *

STEVENS TELESCOPE SIGHTS

The Stevens Company is about eight weeks behind in their orders for telescope sights, consequently purchasers of these scopes must expect considerable delay in filling their orders.

The Stevens Telescope Sight No. 468 is especially made for the Savage bolt action rifle, caliber .22 Model 1919. The barrel of the rifle is drilled and tapped for the special bases that are furnished with this sight. The purchasers in ordering telescopes should always specify the rifle on which they are to be used.

THE DOPE BAG

A FREE SERVICE TO TARGET, BIG GAME AND FIELD SHOTS
ALL QUESTIONS BEING ANSWERED DIRECTLY BY MAIL

Rifles and Big Game Hunting: Major Townsend Whelen Pistols and Revolvers: Major J. S. Hatcher
Shotgun and Field Shooting: Capt. Charles Askins

Every care is used in collecting data for questions submitted, but no responsibility is assumed for any accidents which may occur.

The Physical Side of Big Game Hunting

By Townsend Whelen

FEW sportsmen, save those who have actually experienced protracted trips into the wild, realize that there is more to the successful pursuit of big game than the selection of an outfit and the choice of a competent guide.

How greatly the success and enjoyment of a trip depends upon how well the sportsman is physically equipped to withstand the rigors of the outdoors cannot be too strongly emphasized. The man who goes into the woods in poor physical shape discounts very materially his chances for one hundred percent returns from his outing.

The man who takes up big game hunting as a recreation should bear in mind throughout the year that for from three to possibly six weeks of this period he is going to live under utterly different conditions, be called upon to face difficult situations and be largely dependent upon untiring muscle and endurance.

The man who has prepared himself to meet such demands, finds his season of hunting an unalloyed pleasure. The man who expects overnight to shed the deviating influences of city life and suffer no ills from dawn-to-dusk, trailing over rough going, will find himself speedily disillusioned.

I have been studying physical training and the conservation of health and energy for the past twenty-five years. I know that a man who has to work in a city has to do something more than get out of doors once a week to develop and conserve health, strength, and energy. I should say that the minimum care of the body was about as follows:

1. Diet. No white bread and a minimum of sugar, which develops an acid condition of the body. Stick to *whole* grain bread and cereals that have not been devitalized and demineralized, fresh vegetables, fruits, and salads, with meat once a day. Get plenty to eat but do not overeat. Other than this don't become a crank on your eating.

2. Take ten minutes setting up exercises or calisthenics every morning. Make them brisk, snappy, and energetic. Take a tepid bath or a friction rub with a rough towel following them. Have windows open and let the fresh air get at the skin.

3. Get a brisk walk every day of between two and five miles. *Walk fast.* Take long strides and push hard with the toe as each foot leaves the ground. Walk for exercise.

4. Don't use elevators. Lots of exercise can be gotten going upstairs and down. One day go up all stairs flexing the ankle and using the calves of the legs as much as possible. The next day go up two or three steps at a time. Go down stairs two steps at a time.

5. At least once a week get in at least a ten mile brisk quick walk. Don't wear an overcoat on walks for exercise. Let the exercise keep the body warm.

These habits, continued throughout the year will keep and put you in splendid health, strength, and energy, for ordinary purposes but they are not sufficient to put a man in the best of condition for standing the excessive physical work of big game hunting. Big game hunting should be looked upon as an athletic performance. It is in fact probably a more strenuous game than any other athletics, with the possible exception of football, basketball, baseball, and rowing. It requires not only great endurance but sure footedness and light footedness. It has been the experience of all modern trainers that endurance is best acquired by strenuous exercise only on every other day. If a man were to exercise strenuously every day he might very easily run himself down instead of building himself up, but by strenuous exercises every other day the muscles and tissues have a chance to repair themselves thoroughly on the rest day and a large reserve of energy and endurance results.

Sure footedness and light footedness, which are so essential in getting over the rough country, the fallen trees, and the steep hillsides of the wilderness are best developed by running, jumping, and hopping on one foot and by going downstairs two steps at a time. One needs special exercises of this kind in addition to the keep fit program outlined above to prepare him for a strenuous hunting trip. The keep fit program might be kept up the year round, and then about three months before the hunting trip is to come off the sportsman should increase his exercise up to a point where he is walking from five to ten miles every other day, and in addition in his morning calisthenics exercise he greatly increases the leg work, particularly the deep knee bends, and in the evening before going to bed he does a little running, jumping, and hopping on one foot. I put this last in the evening because even in the city one can usually do this after nightfall without attracting attention; and if it be followed by a bath, which will usually be necessary, it will put one in fine condition for a good night's sleep.

SIGHTING HANDGUNS

I AM attempting to improve the sights on two revolvers, a Colt and a S & W. They both shoot low. I have measured these sights with a caliper and both front sights are much higher than rear sights. I have a S & W .22 S. S. target pistol, and both sights are exactly the same height. I also have a Colt government model pistol, which shoots high, the rear sight being higher than the front sight. How do the factories arrive at such sighting or are they intended to be filed down by purchaser?

I understand the S. & W. people are equipping military revolvers with Patridge sights. What do you think of the Patridge sight for military revolvers? I very much like the Patridge sights on my .22 S & W; however, I am not sure that it is as quick to sight as the regular style.

The Colt automatic government model has a note with it saying that the cartridge cases should not be reloaded. The cartridge box has the same note on it. Can you please advise why these cases should not be reloaded if the regular jacketed bullets are purchased to reload with? F. D., Plummer, Idaho.

Answer (by Major Hatcher). In making the sights for revolvers, the jump of the gun in firing must be considered.

Both the front and rear sights are made exactly the same height above the center line of bore. Most revolvers will shoot quite a bit too high, owing to the jump.

For this reason it is usually necessary to make the front sight higher than the rear sight. In doing this the factories tried to take the average method of holding a revolver; but there is a big variation in the way different people hold, and a gun that is suited to the average man may shoot too high or too low with someone who has a particular grip of his own.

Also, there is a certain variation in individual guns. In general, it will be necessary for each owner of a revolver to sight his own gun in to get the best results.

On the S & W, the rear sight is adjustable for height, so that the relative position of the sights on your S & W .22 target pistol will be whatever you happen to make it in sighting the gun.

I believe that the Patridge sight is the best target sight, and, while some people may not find it quite as quick, there is very little difference, if any, in this respect, as most of the U. S. R. A. records in rapid fire are made with this sight.

The caution against reloading cartridges for the automatic government pistol, is put on in order to relieve the cartridge company and arms manufacturer of any responsibility for any damage which may occur to the gun through an inexperienced hand-loader putting in too much powder, or doing something else that would cause trouble.

There is no other reason why the .45-caliber automatic pistol cartridges should not be reloaded, either with the regular jacketed bullets, or with a cast bullet.

In this cartridge, as in all other large calibers, trouble can be very quickly produced by carelessly getting in an overload.

A SINGLE TRAP GUN

I EXPECT to have built for my own use a single barrel trap gun, and am undecided as to length of barrel. I would like to know wherein lies the advantage, if any, in a 34-inch barrel over a 32- or 30-inch?

Also, in stock dimensions, should the drop at comb and heel be the same? Have heard of one shooter who claims this.

Is a cheek-piece an advantage?

What would you suggest as to stock measurements? Fourteen inches in length suits me all right. Have two double guns, one 2⅛ drop, and one 2¼, but don't believe they are straight enough. E. S., Dalton, Ohio.

Answer (by Capt. Askins). There is no advantage in a 34-inch barrel, for practically none over a 32-inch, except in length of sighting plane and accuracy of holding. The longer the barrel the closer you can hold it. Using trap ammuni-

tion, the 30-inch barrel would fall under the 34-inch only a few feet in velocity.

In stock dimensions, the rule is to use a straighter and longer stock at the trap than is used in game shooting. If you are accustomed to using a 2¼-inch drop, then have the trap stock two-inch drop. Also have the gun a fourth to a half inch longer than you use in the field. Putting the stock to shoulder before calling pull will enable you to use a longer stock without feeling the difference, and stock length lessens the apparent recoil, and it also leads to more accurate holding. I do not like a stock with the same drop at comb and butt. Such a stock never fits the cheek and has a tendency to punish the cheek bone. I'd have the gun 14¼ by 2 at heel and 1½ at comb, and if you cannot shoot such a gun you can learn to.

The cheek-piece is a very nice thing, especially in trap shooting. It gives a firmer and more uniform rest for the face, and leads to more even alignment.

A CALIFORNIA QUAIL LOAD

I HAVE a 12-gauge Winchester shotgun (repeating), Model 12, which has full choke, 32-inch barrel, chambered for 2¾-inch shells. What, in your estimation would be the best factory load for this gun for (California) quail shooting? What would be the best factory load for duck shooting where extreme range is necessary? What is the heaviest charge of No. 93 and De Lux du Pont powders, to be had in stock factory loads for the above length of chamber? What ammunition companies produce these loads?

My gun gives good penetration and pattern with No. 4 chilled shot, and 3½ drams of du Pont quick-burning powders. I thought, however, that with a 32-inch barrel I could probably get better results with a progressive burning powder like No. 93 or De Lux.

What can you say as to the value of Winchester "Brush loads," for upland shooting, *i. e.* quail, doves, etc.? R. F., La Verne, Calif.

Answer (by Capt. Askins). For those California quail in your Winchester, I'd use trap loads, 3 or 3⅛ drams of powder and an ounce and a quarter of 7½ shot. For duck shooting use the Super X load, if you like heavy charges. The regular Super X cartridge with Nos. 6 or 5 shot is the best you can do. The 3-inch Super X will not work through the action of your gun. Du Pont De Luxe is not loaded by any factory so far as I know. Of du Pont 93, the charge is about forty grains, using an ounce and a quarter of shot.

Now and then you will find a gun which will do better work with a 3½-dram load of du Pont than it will with the progressive-burning powders. It might be worth while to pattern your gun with both loads, and then take the one which makes the best and closest pattern. You can be sure of enough velocity in any event, so it is pretty much a question of pattern.

I consider brush loads pretty much worthless in any kind of a gun or load. If you could have these shells loaded to order they would do better. Ordinarily these brush shells have shot charge divided into three sections and the pattern is open and irregular. If they were loaded to order and the shot divided into but two sections, you would come nearer getting what you want and could kill quail up to at least 35 yards. Ordinary brush shells are unreliable beyond 75 feet

THE .404 JEFFREY

CAN you give me the complete ballistics on the .404 Jeffrey? Naturally I am also interested in foot-pounds recoil. N. H. H., Jr., State College, Pa.

Answer (by Maj. Whelen). Herewith are the figures on the .404 Jeffrey Mauser Rifle.

Data from Jeffrey catalogue:

Charge 55 or 60 grains of Cordite .400 grain cupro-nickel jacketed bullet, M. V. 22 f. s., M. E. about 4,000 foot pounds, flush magazine holding four cartridges. Cartridge can also be furnished loaded with flat strip, high velocity cordite, M. V. about 2400 f. s. Jeffrey does not recommend a velocity above 2200 f. s. for soft nose bullets, as with 2400 f. s. the bullet is liable to break up on the skin and not penetrate far enough.

Data from Major Gerald Burrard, Rifle Editor of "The London Field." (More reliable and accurate than Jeffrey figures because checked on the Field chronograph:

Charge 60 grains of Cordite .400 grain cupronickel bullet, M. V. 2150 f. s. Energy at muzzle 4100 ft. lbs.. at 100 yards 3250 ft. lbs., at 200 yds. 2550 ft. lbs., at 300 yards 2,000 ft lbs. Trajectory when sighted for 150 yards—75 yards plus 2.2 inches, 200 yds.—4, 8 inches, 250 yds.—12.6 inches, 300 yds.—24.6 inches.

This rifle has been used in Africa for many years with excellent success. It is considered powerful enough for anything, except a little light for elephant. A little complaint has occasionally been registered against it on account of fired cases sticking in the rifle when barrel got hot in rapid fire, due I think not to the rifle but to soft headed cases. Most of the rifles I have seen could be improved by using a little valve grinding compound on the bolt to make it work easier, and the trigger pulls were not very good and needed adjustment.

LEVER ACTION STRENGTH

WOULD you favor us with your opinion and advice on a .33 Winchester 86, I am altering for my own use? I have done quite a bit of special work of this kind, in the last twenty years, mostly for friends, just because I love the work. I have also loaded all my own cartridges and worked up special loads for all kinds of cartridges and never had an accident in all that time. I weigh my powder, and match my primers, and use the powder makers advice, and will ask you about the pressures of one gun you did not mention in the October issue of the RIFLEMAN, in your answer to P. H. A., of Nephi, Utah. You gave the pressure of 94 Winchester, and Savage .250, as 38,000 and 45,000 respectively. I was always under the impression the 33, 86 model receiver was stronger than the Savage 250.

Will you please tell me, (1) What pressure will the 33 receiver stand with the latest powders. Name the best new powder to use in it for higher velocity than the standard load as put out at factory at the present time.

(2) With the 35-95 model Winchester barrel on my .33 receiver and loaded with a 35,200 Remington bullet soft nose, what charge in grains weight of the latest powder can I use with safety, to increase the velocity above the factory load of the .33 cartridge. I want to get a little more speed with the 35 Remington bullet. They have already increased the Remington 35, and others so it must be safe with the new powder. If so, what lot of powder are they using? The 33 bullet and shell are no good, to my way of thinking. A cartridge should be proportioned. It is an emergency cartridge, wished on to the best action they ever made. I have no intention of ever trying a 35-95 model full load in this gun, as I load all my own shells and no one else ever uses my gun, and never will for safety's sake, all round. G. W. C., Marion, Indiana.

Answer (by Major Whelen). I am not prepared to say what lever action rifle will stand the most pressure before giving away. Most of them will stand almost unbelievable pressures. But the Savage 99 action seems to stand a little higher working pressure without developing excessive headspace than the others, probably because its breech block wedged up against the rear of the receiver is a little better method of support than the sliding locking bolts.

We usually figure the maximum allowable pressure for the Winchester Model 86 action at 38,000 pounds. With this as a limit, the heaviest permissible charge with 200 grain bullet is 41.5 grains of du Pont No. 16 powder which gives a muzzle velocity of 2250 f. s. and a pressure of 38,000 pounds. This is the highest velocity you can get with any powder with the 200 grain bullet. Heavier charges may not blow the rifle up, but they will probably soon set the breech block back and the excessive head space will cause the cases to separate at the head, and then it is only a question of time before you get a bad escape of gas to seriously injure the shooter.

With regard to the .35 caliber barrel on your 86 model receiver, you do not say what case you are using. The powder capacity of the case, the shape of the shoulder of the case, the tolerance between case and chamber, and the leed or throat of the chamber all have a very large influence on the breech pressure. The only possible way of finding out exactly what you are doing, and just how near you can come to 38,000 pounds would be to build a pressure gun. Otherwise, precaution demands that you stop increasing your charge when your primers show a certain compression, and when you judge pressures this way you may be getting an actual pressure of only 32,000 lbs. or it may be 42,000 lbs.

It seems to me that while you may be able to give a 200 grain .35 caliber bullet a trifle more muzzle velocity with allowable pressure than a 200 grain .33 caliber bullet, yet the first named bullet will lose velocity much quicker than the latter, and probably at 200 yards the latter bullet will have the higher velocity.

DISMOUNTING THE MAUSER BOLT

I HAVE a captured German Mauser on which the bolt handle is perfectly straight and I wish to turn it down so it will be more out of the way in putting in a case, etc. The bolt contains some spring which might be weakened by the heat in the operation and I would be glad to have you tell me how to take this Mauser bolt apart so I may be able to remove the springs before heating the bolt handle. This Mauser bolt is a puzzle to me. There do not seem to be any screws or pins in it and I do not know just where to start to take it apart. Of course with a gasoline torch as I intend to use, not much heat would get to the bolt itself, but I would rather be sure by removing the springs. H. F. Z., Middleburgh, N. Y.

Answer (by Maj. Whelen). To completely dismount the bolt of the Mauser rifle:

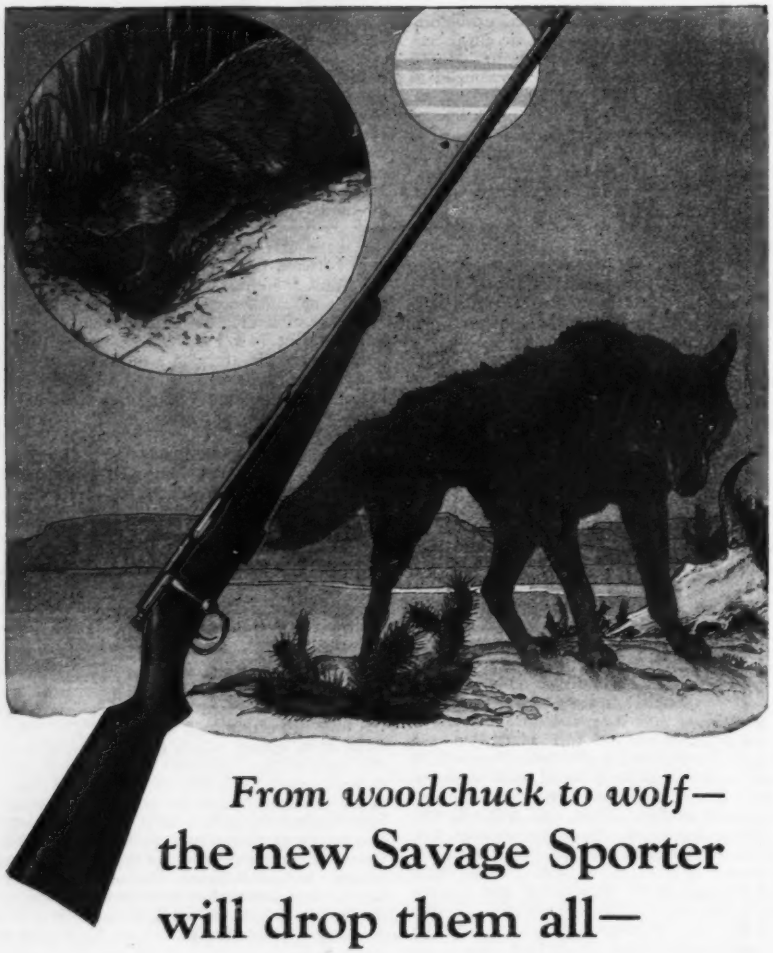
1st: Turn the safety lock to a vertical position. Open the bolt and pull it to the rear. Press forward part of the bolt catch to the left and pull bolt out of the receiver.

2nd: Take bolt in the left hand, and with the right holding the sleeve to which the safety and cocking piece are attached, unscrew the latter and remove these parts together with firing pin and mainspring from the bolt proper. Before, however, this unscrewing can commence it is necessary to depress and retain depressed the small stud on the left of the sleeve.

3rd: To separate the firing pin and mainspring from the sleeve, the point of the firing pin should be pressed against a piece of soft wood on a table. Press down using the thumb on top of the finger piece of the safety. The spring gives way and the rear of the cocking piece comes out of the rear of the sleeve until the cocking piece is clear of the groove or slot which prevents rotation. Holding the parts thus, give the cocking piece a quarter turn, which will free it from the firing pin. All parts can then be detached.

Having performed 1 and 2 above, the handle of the bolt proper can then be bent down by anyone familiar with handling metal and machinist work as follows: Wrap thick damp cloths around all parts of the bolt except the bolt handle. Place the knob of the bolt handle in heavy vise, (or place body of bolt in vise applying force to knob), heat the shank of the bolt handle at proper place to a cherry red with a blow torch, and bend bolt handle to curve desired.

With these directions any good machinist could make a good job of it in case you hesitate to tackle it yourself.



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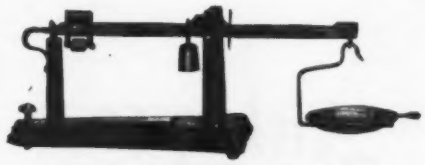

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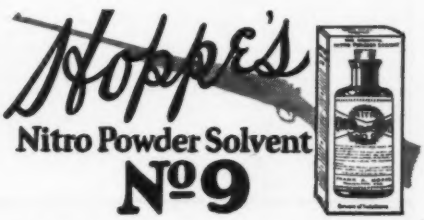

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REVOLVERS REAL CHEAP—12 mm. Lef., $3.00. .22 "My Friend," $7.00. Very fine .22 Remington, $4.50. .36-cal. Remington, $5.00. Fine .44 Starr, $4.50. Scarce, .44 c.f. Remington, $12.00. Two .31 Colt's, as are, $2.00. One Colt .36, round bbl., $3.50. .36 Colt Navy, best action made, $5.00. .36 fluted cylinder, $3.00. .31 Allen & Wheelock, $6.00. .31 Allen & Thurber, $6.00. .30-cal. Whitneyville, $3.50. Out of order .44 Colt, Navy, fine, $2.50. .44-40 Colt D. A., 7½-inch bbl., $5.50. .45 D. A. Colt, 6-in. bbl., with belt holster, $12.00. .44 3rd Dragoon Colt, $25.00. .44 2nd Dragoon Colt, $28.50. Colt 5-shot .36 pocket, $8.00. Pocket .22 Richardson, as are, 50 cents. Sweden 34 percus., $35.00. Pistols out of order, cheap at $5.00. .32 Spanish, .44 E. L. G., British Otis A Smith, .22 H. & R. One Winchester .44 Merwin & Hurbert, on Holster Mer., Win. & Hurbert, both, $12.00. Everett Weaver, Boulder, Colorado.

"FIREARMS OF YESTERDAY" are a specialty with "THE OLD GEORGETOWN GUILD." At all times there are on hand a large number of specimens from which to select examples of early American, Confederate States' and European firearms. Tell us what your collection needs. We will probably be able to help you. The Old Georgetown Guild, 2722 M Street, N. W., Washington, D. C.

TO EXCHANGE—Good used '03 military Springfield for good Kentucky Flintlock rifle. Full description. Double action. Pin fire revolver for short pistol side lock. Milton Ward, 4907 Jackson Bvd., Chicago, Ill.

GUN PARTS CHEAP—All kinds of sights. Pistol and rifle tubes, new. Butt plates, all kinds of screws, locks, cylinders, revolver frames. Hammers late and old. Gun stocks. Springs, all kinds rifle and revolver. Old and new pistol barrels triggers. Sears, blocks and actions. Everett Weaver, Boulder, Colorado.

FOR SALE—2,000 antique firearms at reasonable prices. Send six cents in stamps for 24-page price list. Let me know your special wants along any line of antique firearms. I am always anxious to buy single specimens or entire collections. Joe Kindig, Jr., 336 West Philadelphia Street, York, Pennsylvania.

WANTED—Volume No. 11 Fire Arms in American History "The Revolver." Mart R. Higgins, 744 Powell St., San Bernardino, Cal.

FOR SALE—Obsolete gun parts. Hammer, gun and musket tubes, gun locks, etc. F. Surkamer, 54 W. Lake St., Chicago, Ill.

WANTED—Texas Colt concealed trigger and Walker-Colt lever rammer, both made in Paterson. Colt Dragoon "Address Sam'l. Colt" or made by Colt at Hartford. .44 S & W Russian Army model, single-action, rim-fire. .22 S & W single-shot, Model 1891, single-action. Winchester 1873 .44-40 with brass receiver. Winchester 1866 .44 rim-fire. Copy of Sawyer's "Our Pistols and Revolvers," Vol. 2, J. C. Harvey, 872 Main St., Worcester, Massachusetts.

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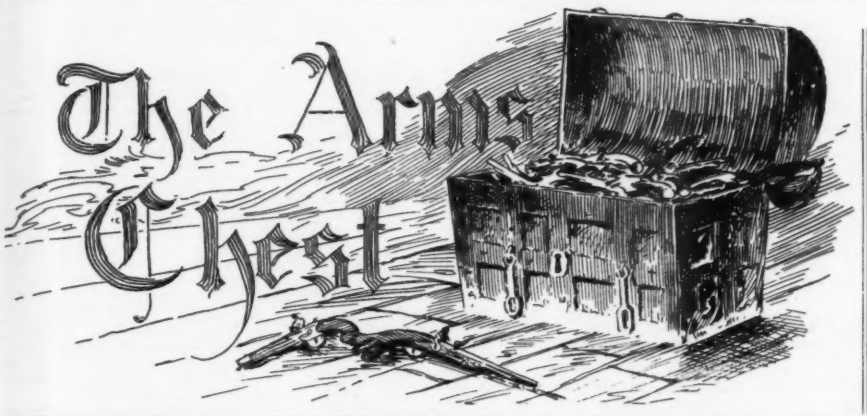

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THE uniformly excellent returns from advertisements appearing in the classified colums of THE AMERICAN RIFLEMAN make it a most satisfactory and productive medium for the disposal of surplus shooting equipment, or the acquisition of special types of firearms.

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To clean stock, we offer the following Cupro-Nickel jacketed bullets in lots of not less than 500 each:

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FOR SALE—Several straight pull and 4 motion bolt action Mannlicher rifles, caliber 7 and 8 mm., cheap. Spanish and German Mauser rifles, cal. 7 and 8 mm., .303 Enfield rifle, 26 in. barrel, new, like sporter $35.00. .30 '06 U. S. 1917 Winchester, like sporter, new, $35.00. .30-'06 U. S. Remington Military, new, $45.00, with sling. .30'06 Springfield 1903, like new, with sling, $38.00. French "itene" carbine, cal. 8 mm. extra good order, $20.00. Brand new remodeled Krag .30-40 Sporter, checkered grips, $35.00 Fancy short model target rifle, cal. 41 rim fire, new, $20.00. Fancy Winchester .25-20 full magazine, half octagon and round barrel, $38.00. Marlin repeater, caliber .32-20 true shooter, fine $35.00. Original German army rifle, cal. 8 mm., with sling, like new, $50.00. Heinel Suhl sporter 18 inch barrel, cal. 8 mm., $30.00. Heinel Suhl carbine, 18 inch barrel, cal. 7 mm., new, $40.00. High grade cameras, binoculars. Ammunition for every gun here above mentioned at reasonable prices, also best gun repairing department in connection. Sportsman's Trading Post, 476 E. Federal St., Youngstown, Ohio. John A. White, Proprietor.

FOR SALE OR TRADE—One Stevens Action No. 49 and stock, double set triggers, $5.00. .22 cal. Model 1922 Springfield, new, .33 caliber Winchester Schoen S. S. target rifle, like new, .38-55 S. S. Winchester pistol grip stock, fancy walnut, checked fine, $12.50. .30 '06 Springfield Sporter, Lyman sight on bolt, like new, $30.00. .32-40 S. S. Winchester target rifle, fancy stock, target sights, set trigger, like new, $25.00. .38 S. & W. Special 8⅝ inch barrel, made by Wilburn. WANTED—Remington Army Model Pistol, extra heavy target rifle, Winchester or Ballard action. J. C. Lichliter, 1115 W. First Ave., Spokane, Wash.

FOR SALE—Springfield light sporter, 6¾ lbs. beautiful stock, anti-flinch pad, Lyman 34 rear gold bead front, new 20 inch barrel, very accurate $65.00. .25-20 Winchester Carbine, new fancy stock and forearm Lyman sighted, $50.00. Krag Sporter, fine stock, recoil pad, bolt peep, Lyman front, new barrel, $30.00. New .22 off-hand target Stevens pistol 6 inch barrel, holster, $9.00. Stamps for photos. Sporting stocks for Springfield and Krag rifles $15.00 to $50.00, according to wood and finish. Remodeling on all rifles to order. WANT—.250-3000 Savage bolt rifle. R. D. Tait, Montague, California.

WANTED—Illinois civilians to affiliate with their local rifle club and have their club affiliate with the Illinois State Rifle Association. We want at least seven new men who have never attended National Matches to get in, and earn a place on the team. Any old-timer will be glad to give a helping hand. For information and application blanks, ask L. M. Felt, 132 S. Parkside Ave., Chicago, Illinois.

FOR SALE—Gunsmith and sporting goods business, in the best city in Wyoming, and in the best big game and fishing country in the West. Right man can control most of gun work in Wyoming and Montana, not another place like it in either state, doing a fine business with gun, ammunition and fishing tackle, have the pick of this trade coming to our place. My reason for offering it for sale is: Just recently I have been made a very attractive offer in Alaska. This offer is open to two men, both have been picked and I happen to be one of them. A chance of a lifetime and would like to take it up, but first I must dispose of my holdings in Sheridan, Wyoming. Will sell for $5500.00 and give a clean bill-of-sale covering stock and tool equipment, which cannot be replaced for $6,000.00, new stock of sporting goods that will run the place through the season, and when I turn it over there wil be no bills to pay. This is a real proposition for the right party. If there is a gunsmith that wants to get a real location in a real hunting and fishing country he can't beat this. The place is good for from $8,000.00 to $10,000.00 a year, and more as it grows. I started this place three years ago with not over $1500.00 and today it will invoice $6000.00. Very few places will show the same gain during that period. I want to make a quick sale and get to Alaska early this summer, so if you are in the market for such a place get busy and write me, also write for reference to C. R. Thorn with Sheridan Banking Company, where I do business. Chas. A. Evans, 169 North Main St., Sheridan, Wyo.

FOR SALE—Super-fine indoor and outdoor Schuetzen outfit, complete in every detail, perfect guncrank condition inside and out. Finest handmade rifle in Denver, any kind or caliber. Stock finest plated, engraved scrolled "capbox." Silver plated Schuetzen butt plate, engraved. Finely checkered. Pistol grip heavily engraved Ballard action, double set triggers. Fore-ends to correspond. Palm rest. Weight with either interchangeable barrel, about 15 lbs. Both barrels thirty inch, 22 full octagon, .38-55 round. Both Schoyen make. Two Peterson scopes with full fittings each, about 4x and 6x. Complete .38-55 loading Schuetzen outfit. Sole leather box case. Will send photographs and unquestionable reference. No trades, bargain hunters, checks or C. O. D. pre-War cost over $500.00 Sell one-half, $250.00 cash F. O. B. Fred Gorringe, Edgewater, Colorado.

FOR SALE—Highest grade Rigby double hammerless ejector rifle for the .350 Magnum H. V. cartridge. Weight 9 lbs., 25 inch barrels; flat top rear and bead front sight. Extra full pistol grip stock 13¾ inches by 2¾ inches. Side lock action; top lever and safety. Sling swivels. An absolutely new and perfect weapon, only fired by me to test accuracy and regulation which is guaranteed correct. With spare sights, muzzle cover, etc., $700.00. Rifle on exhibition at Griffin and Howe, 234 East 39th St., New York City, N. Y. Major T. D. Sloan, Fort Bragg, North Carolina.

WANTED—A winning Civilian Team from Pennsylvania at the National Matches this fall and every shooter in Pennsylvania to correspond with C. T. Patterson, 843 Napier Ave., Laurence Park, Erie, Penna.

FOR SALE—These rifles just received from factory, made strictly to my orders. In stock ready to ship, you get them next day. Groups guaranteed or money back, as follows, each tested when finished by expert riflemen. 7 mm. Single Shot drop block, free rifle, heavy, set triggers, Swiss stock with movable butt plate, peep sight built onto grip, not screwed on, engraving is fine quality, English scroll, fastest lock time, and bored to fit Western Lubaloy bullets exact, $15.00. Same rifling but highest grade Mauser, engraved action, fluted rust proof steel barrel, 28 inch heavy barrel, 14 lbs., better engraving, two butt plates, four inch groups, 300 meters guarantee or money back, $175.00. .375 Magnum and .425 Magnum Mausers, highest quality in every way, moose and bear rifles, same accuracy at 100 yards as Springfield, guaranteed or money back, $150.00 each. .22 cal. nickel, Niedner single shot, 28 inch, Lyman peep, highly engraved double set triggers, drop block action, 9 lbs. Stocked by hand, in very finest figure, oil polish, shotgun stock, cheek piece, test shows dime groups 50 yards, every one guaranteed and the most beautiful rifles in America regardless of cost or make, $85.00. Hervey Lovell, 2809 Bellefontaine St., Indianapolis, Indiana.

FOR SALE—Resizing dies, cal. .45-70, .45 Colt, .45 S. & W., each $1.50. 30 Krag neck-resizing dies, each $1.00. .50 cal. Remington Navy pistol, with 60 ball cartridges. $14.00. Bullet sizing tool, hand type, cal. .50 pistol, $1.50. Web cartridge belts, .45-70 each, 40 cts. Leather cartridge boxes, .45-70 and .30 Krag, each 35 cts. 20 guage brass shells, empty, 60 cts. dozen. Collection of about 70 ancient and modern cartridges, $3.50. One inch Gatling cartridges, unloaded, first type made, each $1. Spare revolver cylinders, .45 Colt S. A., .38 Colt D. A. Army, .44 Colt cap and ball, .36 Colt cap and ball, each $1.00. Ideal loading press, cal. 30 Krag, good condition, $14.00. Ideal 8-ball moulds No. 308333, No. 308274, each $5.00. Winchester reloading tool, .44 W. C. F., $1.50. Ideal double adjustable chamber, .45 Colt auto. cartridge, $1.25. WANT—3$ rimfire Stevens single shot pistol, .50-115 Bullard repeating rifle; both in good condition and back numbers of "Arms and the Man" before 1920, either single copies or bound volumes. B. K. Wingate, 448 Birkle Ave., Bethlehem, Penna.

WANTED—Remington .41 caliber Derringer, nickel plated and pearl grips if possible. Stevense .22 caliber Diamond model target pistol with 6 inch to 10 inch barrel. Pre-War Luger, 9 mm., 6 or 8 inch barrel. Give date. All of above guns must be perfect in barrel and action and priced reasonable. Give full particulars in first letter. SELL OR EXCHANGE—Ithaca 20 gauge Auto. and Burglar gun. Never fired. Two pair pre-War German Prism Binoculars, 4x and 6x, perfect condition. L. W. Warnken, Adrian, Missouri.

FOR SALE OR TRADE—Heavy Winchester single shot rifle, .22 long rifle, double set triggers, Schuetzen style fancy stock, very accurate, $50.00. Stevens Ideal .32-40 single shot with double set triggers and palm rest. Perfect inside and out and very accurate, $30. WANT—Wheen gunsling, perfect Springfield, and .30 '06 reloading tools with mould, also B. S. A. D. S. Purdy, 119 Utica Street, Ithaca, N. Y.

FOR SALE AT SACRIFICE—Pachmayr Mauser Sporting Rifle, cal. .30, 1906. Genuine Waffenfabrik Mauser action and barrel, very accurate. Pachmayr stock of beautiful dark curly walnut, pistol grip, cheek piece, de luxe checking. New condition; $125.00 Remington Lee Sporting Rifle, cal. .30-40. Pachmayr stock, pistol grip, cheek piece, plain checking, perfect condition; $75.00 Winchester Model 1912, 16-gauge shotgun. Pachmayr stock with cheek piece and checked pistol grip. Specially bored by Pachmayr for even pattern and hard shooting. Perfect condition. $60.00 Winchester Model 1886, cal. .33, half mag., shotgun butt, Marble sights, receiver worn on outside, otherwise absolutely new condition. $35.00 Winchester Model 1894, cal. .32 Special. Round barrel, half mag., Marble sights. Outside of receiver worn, otherwise perfect condition; $25.00. James A. Moody, 1543 La Brea Ave., Hollywood, California.

FOR SALE—.44 S. & W. Special 6½ inch barrel, Heiser's Holster and Belt with 50 Lopes, everything brand new, $50.00, cost $68.00. Colt Officer's target .38 special in Heiser's fancy holster and belt with 50 Lopes, all brand new, $40. Cost $55.00. Six inch Luger, cal. 9 mm., $25.00, worth $40.00. 8 inch Luger 9 mm. $30.00. Early E. & W. .22 cal. pocket revolver nickel plate 7 shot $25.00. Stevens No. 10 target pistol cal. .22, new, $18.00. Used one $15.00. U. S. Savage Auto. pistol, cal. .45, 9 shot, new, $22.00. Used one $20.00. Colt .45 S. A. old U. S. model 6 shot and 7½ inch barrel, holster and belt second hand, outfit well worth $20.00. Colt .38 D. A. Pocket model, nickel finish, $18.00. Six and 8 power binoculars from $25.00 to $50.00 for trade. John A. White, 476 East Federal St., Youngstown, Ohio.

FOR SALE—Very accurate B. S. A. and 5-A scope, $55.00 New Model 52 with 5-A scope, $60.00. Will sell with or without scope. Very fine National Match Springfield wth 200 1923 Match cartridges, $40.00. Brand new S & W .38 Special, target sights, $30.00. Parts for Bond tool .38 special, $3.50. A Colt D. A. .38, in very good condition, perfect 6-inch barrel, $15.00. New Ottway 20-X spotting scope, $9.00. also a large 25-X 3-draw, 30-inches extended, $20.00. Would like to obtain a Ballard action, plain or engraved, for cash or trade. Fred. N. Anderson, 174 Lafayette Ave., Suffern, N. Y.

FOR SALE—.256 Newton, one of the last built by C. Newton, perfect, shot 20 times, stock refinished in oil, straight line reloading tool by Kosholiek, and 30, 140-grain bullets, $50.00. .38 S. & W. Special, target, pearl grips, 142 cartridges, inside perfect, outside excellent, $30.00. .25 Colt nickel, Colt pearl grips, revolver perfect, 78 cartridges, $20.00. R. H. Lanferman, 7063 Greenview Ave., Chicago, Illinois.

FOR SALE—Adolph de luxe rifle, .35 Newton, Mauser action, antinite barrel, 24 inch matted rib, double folding leafsight, 48 Lyman rear sight, pistol grip, Whelen cheekpiece, 13¾ butt plate with trap, bear group in relief on floor plate, fancy checking, $350.00 in 1922. Just like new. With 60 cartridges of Western make, $250.00. Irving Bacon, Lawyer, Auburn, N. Y.

FOR SALE—One Krag Carbine, Lyman No. 34 rear and Ivory bead. One Krag Carbine, regular rear and gold bead. One Springfield, selected, Lyman No. 48 rear, No. 26 front. Winchester Model '95 Take-down, 405 caliber. Colt .45 Auto. All in good shape. G. L. Roach, Box 126, Round Lake, N. Y.

FOR SALE—Krag Carbine, good condition, black walnut P. G. stock, fairly good job, amateur work, checkered grip and forearm, Lyman 34 rear sight. A nice rifle for $17.50. No chance to use it. Will trade for .38 Army Special in good condition. John W. Aitken, Nekoma, North Dakota.

FOR SALE—.38 Special Colt's O. M. 4½ inch barrel. Special target front sight (cost $10.00), specially adapted to carry in holster or pocket. Good condition. First M. O. for $25.00 takes same. L. E. Hale, 2933 13th Ave., S., Minneapolis, Minnesota.

FOR SALE—One Hensold Wetzlar Dyalt Rifle Telescope, 3 power with picket reticule, adjustable for elevation. In perfect condition. Eye relief 3½ inches suitable for mounting in Noske mount. Price $40.00. Box 28, THE AMERICAN RIFLEMAN.

FOR SALE—Winchester Model 95, .30 Army, 28 inch barrel, Lyman sights No. 21, No. 6 and No. 26. Very accurate, good condition, barrel perfect, price $35.00. D. S. Marshall, Attapulgus, Georgia.

FOR SALE—Irish Water Spaniel puppy, four months old, choice of litter reserved for myself. Chance of residence location necessitates sale. Price $25.00. M. Woodmansee, Box 87, Des Moines, Iowa.

FOR SALE—Pair Rhunkle Binoculars 12x, practically new, $35.00. O. C. Rowe, 5601 Geary St., San Francisco, Calif.

FOR SALE—16 by 16 foot square Army pyramid tent, with wall and hood at top. Complete with hood, ropes and stakes. Pole not included. This is a genuine U. S. Army tent made of TWELVE OUNCE KHAKI DUCK which is absolutely waterproof and not just showerproof. It will shed an all night rain. This tent is not new but is in excellent condition. It was purchased of a tent dealer last year and used on a two-weeks camp where it gave absolute satisfaction. It is large enough to hold eight cots comfortably and will make a wonderful tent for five to eight in a fixed camp and might well be set up on the range of a small rifle club and left up all season. A new tent of this quality and workmanship would cost $150 today. Price $35.00 f. o. b. Philadelphia. Campbell Watson, % Philadelphia Trust Company, Broad & Chestnut Sts., Philadelphia, Pa.

FOR SALE—New Springfield N. R. A. Sporting Model, fitted with Lyman No. 48 rear and sheard gold bead front, made in December 1923, barrel same dimensions as .22 cal. Sprngfield. 1922 pistol grip stock altered, refinished, checkered, fitted wth shotgun butt (checkered) and pistol grip cap by Griffin and Howe. One target fired for accuracy test, price $75.00, or will exchange for new pressure barrel Springfield outfit, fitted with Winchester scope. No other trades considered. DHE Parker auto ejector, practically factory condition, 30-inch barrels, right mod. and left full stock, 1⅝ x 2½ x 13¾ straight grip Jotsam pad, and chambered for 2⅝ -in. shell. Price, $100.00. No trades. Dunlap Roddey, Rock Hill, South Carolina.

FOR SALE—One Marlin No. 39 $20.00. One Reising Automatic Pistol, $20.00. One Colt Army Special, 6 inch barrel, $18.00. One 12 ga. 30 inch Winchester repeating shotgun, ribbed barrel, $25.00. All the above in good condition. One .22-32 S. & W., almost new, $22.00. One 16 sz. 992 Hamilton Mov. 21 Jewels, 20 year Boss case, like new in every way, $40.00.

FOR SALE—Model 52 bolt-action Winchester, with specially selected A15 Winchester scope and No. 2 mounts. In absolutely factory condition excepting few slight surface dents in stock; fired possibly 200 times. An outfit of tack-hole accuracy. Sell for best offer, money back if you want it. Sidney J. Cannon, 14937 Centerville Ave., Aqueduct, L. I., N. Y.

FOR SALE—Match Rifle, Stevens Action, .22 Long Rifle, Peterson barrel, also .38-55 Stevens barrel for same action, all in perfect condition inside and out, a good winner, price $35.00 if sold at once. Also Stevens late model target pistol, new, price $10.00. S. P. Randolph, 4868 Emerson St., Denver, Colorado.

TRADE—.30 U. S. Model 95, S. F. Winchester Rifle. Bore and action perfect. Just back from factory. Ivory front sight, musket windgauge rear. Musket butt with trap, carbine fore-end with sling. WANT—First class American scope, Fecker preferred. D. Stanley Armitage, Attica, Ohio.

FOR SALE—1,000 100-grain open point Western, 32 87-grain soft point, 66 87-grain solid point bulets, 300 empty shells, complete Bond reloading tools, for .250-3000 Savage, $25.00. Norman M. Hill, Box 27, Jacksonville, Florida.

FOR SALE—Colt's Single Action Army, 5½ inch barrel, .32-20 Colt's factory job, very accurate, easy trigger pull and in perfect condition. $24.50 delivered. H. N. Spencer, 1601 Railway Exch. Bldg., St. Louis, Mo.

SELL OR TRADE—English muzzle loading double barrel gun, 13 gauge, 28 inch barrel, 6½ lbs., engraved, mounting locks marked "Bowen," fine shape, $20.00. O. A. Trandum, Route 1, Box 8, Oslo, Minnesota.

FOR SALE—One .32-40 Winchester, Model 1894. Good condition and exceptionally accurate. Shot about 120 times. Price $28.00. G. M. Atherholt, 1230 Proctor st., Port Arthur, Texas.

FOR SALE—Crosman Air Rifle, new, 1,000 pellets, valve wrench, $10.00. Edwin E. Farr, Wadsworth, Ohio.

TRADE—Fecker 6-power rifle telescope, new condition, for Winchester 5-A 5 power telescope, like condition. R. H. Davidson, Box 89, Irvine, Alberta, Canada.

WANTED—One S. & W. perfect model 10 inch barrel. Must be in fine condition. One Springfield '03, good condition. A. P. Lytle, Livingston, Montana.

WANTED—500 or 1,000 empty .30 cal. Luger cases, new, or must not have been used but once. Dr. J. Cohn, Box 1105, Boise, Idaho.

FOR SALE—Krag rifle barrel and rear sight, in excellent condition. 3.50 postpaid. Herschel N. Goltry, Amber, Oklahoma.

WANT—To buy some .25-21 Stevens cases or loaded shells. Dr. J. N. Garlinghouse, Clinton, N. Y.

WANTED—Colt's Officers' Model Target, 7½ inch barrel, caliber .38; New Service Target, 7½ inch barrel, cal. .45; Reising Automatic, caliber .22 with or without holsters. These guns must be new or nearly so. Money Order will be mailed immediately upon receipt of most reasonable offer. FOR SALE—Powerful Rifle Range Spotting Telescope, 33 to 35 power, 5-draw, with 2¼ inch objective (front) lens. Perfect condition except slight tear in leather covering at one spot. First money order for $30.00 gets it. Might consider even trade for Colt O. M. Target .38 mentioned above, if like new. Dr. Chas. Brodsky, 117-01 Metropolis Ave., Richmond Hill, New York.

FOR SALE—No. 12 B. S. A. with following equipment: No. 2 six-hole rear sight; No. 19-A aperture and bar point sight with extra aperture and fine bead to interchange. Shootwell telescope sight with two reticules in leather case. Rapid loader attached to fore end. Leather rear sight guard. Pair of elbow pads for prone shooting. Price for outfit, $50.00 certified check or money order. This rifle has been used but little and is in excellent conditon, practically new. C. E. Bailey, Chambersburg, Pa.

FOR SALE—.250-3000 Savage, lever action .25-35 Winchester Carbine, rifle stock, extra .38 Special S & W Military target. .22 S & W Single Shot target pistol, 8-in. barrel, .44 Remington cap and ball revolver. All in fine condition and priced to sell. WANT .45 Colt single action or Bisley. Must be perfect. W. H. Slines, 712 N. Irving Ave., Scranton, Penna.

FOR SALE—One M-11 automatic pistol, absolutely new, specially selected weapon, and wonderfully accurate. Fitted with Patridge Sights, checked back and front straps, grip safety and trigger, match barrel. Workmanship on a par with finest target revolvers. Cost to duplicate $55.00. Take $35.00. T. C. Barrier, Box 52, Statesville, North Carolina.

TRADE—Five new L. C. Smith 16 gauge double 30 inch royal steel bbls., full choke, low circle hammers, and fine new S. & W. .38 Special 4½ inch barrel, for new Remington Auto. shotgun, or will trade .38 S. & W. Special for 22 cal. Colt's Police Positive Special cal. .38, or .22 cal. Colt's Auto., new. E. A. Hilkert, Knightstown, Indiana.

FOR SALE—Eight-inch .22 S & W Nickel Model 1912 Single Action. No longer manufactured, like new, $20.00. Colt's .45 Auto. Commercial finish Belt, Holster, Clips and Clip case, fine outfit, like new, $30.00. S & W .38 Special Target Sights $25.00. Will buy umbrella tent. A. H. Reupke, 2608 Le Claire St., Davenport, Ia.

FOR SALE—One Winchester A-5 Power Scope. Fitted with Fecker additional eyepiece increasing power to 10 power. In first class condition, only bluing is worn some. First U. S. Money Order for $25.00 takes it. C. A. Slaven, 960 Wabash Ave., Terre Haute, Indiana.

FOR SALE—Winchester 5-A Scope in factory box, never used, will sell or trade for .38 Officers' Model Colt, 7½-inch barrel, or .38 Colt Auto. M. M. Must be nearly new. Ernest Famasoli, Jr., 4808 Kenmore Ave., Chicago, Ill.

FOR SALE—.38 S & W Special, 4 inches, extra 6 inches and tools, also .41 Colt Army Special, 1200 rounds ammunition, also tools .30-40 Winchester, .32-40 Winchester. H. T. Halliwell, Schroon Lake, N. Y.

FOR SALE—.32 Colt Auto. $15.00. .33 Winchester $25.00. Winchester .22 Auto. $24.00 and S. S. $5.00, extra sights and cases. All in good condition. Allan C. Irish, Strand Bldg., Poughkeepsie, New Work.

FOR SALE—*Arms and the Man* and THE AMERICAN RIFLEMAN from March 15, 1922, to March 15, 1924, $5.00 postpaid. H. Lawrence Roth, 245 E. Gravers Lane, Phila., Pa.

FOR SALE—6 mm. Lee-Winchester Straight-Pull checkered pistol grip sporting stock, Lyman sights, scope blocks, new, price $45.00. F. W. Chapman, 162 So. Main St., St. Albans, Vt.

TRADE—An 8 or 10 point buck head for a .22 Reising or Colt Auto. or Colt .45 Auto. Will trade both heads for a 1920 Savage .300. Lewis W. Phelps, State Capitol, Hartford, Connecticut.

WANTED—.38-40 Double Action Revolver, .38 and .45 military model automatics. Must be in good condition and cheap. P. Thorson, Rockport, Washington.

FOR SALE—.22 Colt Auto. holster and 100 20-yard pistol targets. First Money Order for $30.00 takes it. E. J. Mikulas, 1514 12th Ave., E., Cedar Rapids, Iowa.

WANT—Good spotting telescope. Must be good, clear glass. Give description and price in first letter. Charles Hoffmeister, Imperial, Nebraska.

WANTED—High-grade guns, second hand. Condition no object. State particulars fully. F. Surkamer, 54 W. Lake St., Chicago, Ill.

At 25 Yards

Five "possibles" shot by W. W. Embley, Trenton (N. J.) Rifle Club

At 100 Yards

Two "possibles" shot by "Jimmy" Hilborn, Seneca (N. Y.) Rifle Club

At 50 Yards

Five "possibles" shot by J. W. Gillies (upper three), A. L. Smith (lower right), W. Knight (lower left)

The All-Range .22

The idea prevailed at one time that a cartridge which did accurate work at long distances was not suitable for short-range shooting. The claim was made that a long-range cartridge did not stabilize itself or steady down until it had traveled beyond the usual short-range distances.

With the advent of the US .22 N.R.A., this idea was completely exploded. Because of its extremely accurate performance at short-range, mid-range as well as long-range, the US .22 N.R.A. has come to be known as the all-range .22. Look at the targets reproduced above. These were shot at the shorter distances.

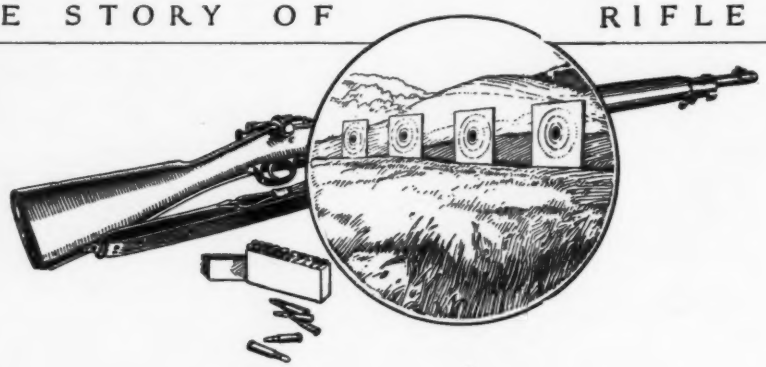
Not only is the US .22 N.R.A. an all-range small-bore cartridge, but it is an all-arms cartridge. It shoots with unfailing accuracy in rifle, pistol or revolver — indoors or outdoors.

We have just issued a booklet, "The Answer is in the Bull's Eye", which contains some illuminating information about small-bore shooting. Write for your copy.

UNITED STATES CARTRIDGE COMPANY
111 Broadway New York, N. Y.

US .22 N.R.A.
Long Rifle Cartridges

THE STORY OF RIFLE POWDERS



Wearing Out the Rifle Barrel

ALLOY bullets have gained much of their popularity because of the idea that they will not wear out the barrel as rapidly as metal cased bullets. When the force of the powder gases pushing behind the bullet is taken into consideration, when the fact that modern rifle barrels are made of the toughest steel, is considered, and when the relative softness of the "gilding metal" and cupro-nickel jackets of the regular commercial bullets is borne in mind, the "alloy bullet, longer barrel life" theory loses most of its strength.

The thing that wears out rifle barrels is powder gas, more than bullet friction. The reason the rifle fired only with alloy bullets outlasts the one that is fired with metal-cased bullets is because the alloy bullets are of necessity fired with reduced charges of powder. Metal cased bullets fired with the same reduced loads of powder would not show rapid barrel wear.

A very important development has been made by American ammunition manufacturers, in the perfection of the "gilding metal" (alloy of copper and zinc, with or without addition of tin) jacketed bullet, reducing metal fouling as compared with the older "cupro-nickel" jacketed bullet. We had developed a powder containing "decoppering" metal, intended to reduce the accumulation of metal fouling resulting from the use of cupro-nickel jacketed bullets. This development is now of less importance to users of sporting ammunition because of the reduction in metal fouling resulting from use of "gilding metal" jacketed bullets.

The useful life of the rifle barrel depends primarily on the kind and quantity of powder used, not on the composition of the bullet. It is a generally known fact that nitrocellulose powders give the minimum of "gas cutting" or erosion and consequently give the longest barrel life. All du Pont Smokeless Rifle Powders are of nitrocellulose composition.

DU PONT

E. I. DU PONT DE NEMOURS & CO.
INCORPORATED

Military Sales Division — Wilmington, Delaware

The characteristics and adaptability of powders are subjects for constant study and experimentation by manufacturers of ammunition who are scientifically and mechanically equipped to produce cartridges of the greatest uniformity and dependability. We recommend factory loaded ammunition.